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The President's Column

Morris H. Hansen

"STATISTICS AS A CAREER"

The National Office of the Association receives, in the course of a year, many requests for information about the work of statisticians and the requirements necessary for a career in statistics. These requests come from students in high school and college as well as vocational guidance counselors, teachers, librarians and others concerned with helping students prepare themselves for future study. Since 1952 the Association has distributed a reprint of an article from THE AMERICAN STATISTICIAN entitled "Statistics as a Career", which contains information on educational requirements and other aspects of working with statistics. In addition, ASA receives, from time to time, requests to review material from public and private organizations publishing career booklets.

However, there seems to be the need for a definitive brochure on statistical careers which will be both broad and specific in providing adequate guidance in an evolving discipline. Several years ago, the Association's Section on Training, in cooperation with the Institute of Mathematical Statistics, began planning for the eventual preparation of a completely new work. The Board of Directors of ASA and the Council of IMS have authorized funds for the writing and printing of such a brochure. Both societies have appointed advisory committees to consult with the science writer, Michael Amrine who has contracted with us to draft the brochure. Mr. Amrine also serves as a public relations consultant for ASA particularly on publicity for the Annual Meeting. Bernard Greenberg is Chairman of the ASA committee to advise on the brochure.

The preparation of the new brochure is still in the preliminary stages; however, Mr. Amrine has suggested that it may proceed along the lines of the following tentative outline. (Mr. Amrine, in the course of gathering information on statistical work, has talked to a number of members of ASA and IMS.) An introduction will offer salient facts about the present state of statistics. Then a section will discuss what statisticians do, where they are, and the diversity of activities in which statisticians are found. A brief note on the history, changing nature of the work, different types and so on will be included, along with a discussion of new frontiers and present trends indicating future challenges.

(Continued on back cover)

NEWS 1960 ANNUAL MEETING PLANS—TV RATINGS STUDY BEGINS—TRAVEL GRANT AWARDS—VIRGINIA ACADEMY OF SCIENCE STATISTICAL MEETING PROGRAM—SUMMER SESSIONS—MEETINGS—ANNOUNCEMENTS

1960 Annual Meeting, August 23-26

The Local Arrangements Committee, headed by Dean Albert H. Bowker, Graduate Division, Stanford University, and the Program Committee chaired by Philip M. Hauser, University of Chicago, are working hard to make the 120th Annual Meeting of the ASA both enjoyable and profitable for those attending. This meeting will be held at Stanford University August 23-26, in conjunction with meetings of the Biometric Society (ENAR), the Biometric Society (WNAR), the Econometric Society, the Institute of Mathematical Statistics, the Western Economic Association, and the Western Farm Economic Association.

Pleasant dormitory and dining facilities on the campus will be available. The rate is $7.16 per person per day (two people in a room) for both room and meals. A very few single accommodations are available for an additional $2.00 a day. Children under twelve will be charged half price. Rooms are not available without meals, but arrangements may be worked out to sell separate tickets for meals. For those who prefer accommodations off the campus there are good hotels in the city of Palo Alto (about a mile from the campus), and fine motels along the nearby El Camino Real.

Members of the Association who live in other parts of the country will find excellent transportation facilities are available. Jet flights cost as little as $254, round-trip, from New York City and $194 from Chicago (tourist class). Fares on the turbo-prop planes are slightly lower. The San Francisco Airport is situated south of San Francisco, about equidistant in terms of travel time from Stanford and the city. The railroads offer a round-trip arrangement which permits the passenger to go from East Coast cities or Chicago to the West Coast by any of the transcontinental lines and return by any other. This should be of particular interest to ASA members who wish to combine attendance at the Annual Meeting with a vacation in the Pacific Northwest, Southern California, or the Rocky Mountains. For members who must come back after the meeting the convention dates have been set to make it possible to return before the Labor Day weekend.

The Program Committee is planning a general session with an outstanding speaker for the evening of the 24th. Following this there will be a special Stanford University program. The Presidential Address and the informal party are scheduled for Thursday evening, August 25th. There will be the traditional Economic Outlook luncheon with President-Elect Martin R. Gainsbrugh as Chairman. The Section on Physical and Engineering Sciences is scheduling joint sessions with the Institute of Mathematical Statistics on spectral analysis of time series and non-linear estimation. The Business and Economic Statistics Section and the Section on Training are jointly sponsoring sessions on improvement of seasonal adjustments for business forecasting, anticipations and intentions data as an aid to forecasting, inventory forecasting, measuring improvements in the effectiveness of distribution, current changes in index numbers, and statistical training for operations research; the B & E S and Social Statistics sections plan a joint session on world population growth and its implications for us in the '60's. Sessions on the U.S. 1960 censuses and research on fertility and mortality are among those scheduled by the Social Statistics Section. Financial analysts will hazard their reputations in a session entitled "The Stock Market—What's Going to Happen Next Year and After That?" The Biometrics Section, the Section on Physical and Engineering Sciences, and the Social Statistics Section are co-sponsoring a session on air pollution and water pollution. The entire program of the joint meetings of ASA, ENAR, WNAR and IMS will be printed in the June issue of THE AMERICAN STATISTICIAN, subject, of course, to last-minute changes.

Technical Committee on Broadcast Ratings

A committee of the American Statistical Association has been designated by President Morris H. Hansen to undertake an examination and technical evaluation of the statistical methods used by the principal television program rating services. This committee was established at the request of the Subcommittee on Legislative Oversight of the House Committee on Interstate and Foreign Commerce, U.S. Congress. Members of the new ASA committee are Dr. William G. Madow, Stanford Research Institute, Menlo Park, California (Chairman); Dr. Raymond J. Jessen, General Analysis Corporation, Los Angeles; and Dr. Herbert Hyman, Columbia University, New York City.

The Subcommittee on Legislative Oversight has been studying the statutes and regulations applicable to programs which radio and television stations are broadcasting, and the need for further legislative action. It found that the kind of programs broadcast depended largely upon public acceptance as indicated by the ratings assigned by certain "rating services." Since the determination of such ratings involved sample surveys, the Committee felt there should be an independent examination of the statistical procedures used. In the past the Committee on Interstate and Foreign Commerce has had similar cooperation from other scientific and professional organizations when legislative matters have included questions of a highly technical nature. In a letter to Dr. Hansen Congressman Oren Harris, Chairman of the House Committee on Interstate and Foreign Commerce, expressed his gratification that the American Statistical Association had been willing to arrange professional assistance in a specialized area in which the public interest is deeply involved.

The decision to undertake the study was made after

consideration by the Board and Council. The necessary funds to support it will be provided by the Committee on Interstate and Foreign Commerce. The obligation undertaken by the American Statistical Association was the selection of the committee to make the study; the findings will not be subject to review or approval prior to publication by either the Association or the Congressional Committee.

ASA International Conference Travel Grants

The ASA Committee on International Conference Travel Grants has approved the applications of the following ASA members for travel grants to attend international statistical conferences during the calendar year 1960:

For attendance at the 32nd session of the International Statistical Institute, Tokyo, May 30-June 9, 1960—

Rolf Erwin Bargmann, Virginia Polytechnic Institute
Acheson J. Duncan, The Johns Hopkins University
Robert H. Riffenburgh, University of Hawaii
Hendrik S. Houthakker, Stanford University
Ernest Rubin, U.S. Department of Commerce
William J. Youden, National Bureau of Standards

For attendance at the African Regional Meeting of the International Association for Research in Income and Wealth, Bukavu or Addis Ababa, winter of 1960—

Raymond W. Goldsmith, New York University

For attendance at the Biometric Society Symposium on Quantitative Methods in Pharmacology, Leyden, May 10-13, 1960—

John Gurland, Iowa State University
William Weiss, U.S. Food and Drug Administration

For attendance at the 2nd International Conference on Operational Research, Aix-en-Provence, September 5-10, 1960—

Eliezer Naddor, The Johns Hopkins University

The grants awarded under the ASA travel grant program, as previously announced in THE AMERICAN STATISTICIAN, are financed by a three-year subvention of $9,000 received in 1957 from the Carnegie Corporation of New York. With the awards approved for meetings in 1960, the ASA travel grant program will be terminated unless the original three-year grant is renewed or other sources of support for the program are forthcoming. The Committee on International Conference Travel Grants, which has administered the program, will submit a report to the Board of Directors of the Association covering operation of the program since its inception in 1957, and recommending that efforts be made to arrange for continuation of a travel grant program in some form to encourage and assist in participation by members of the Association in international scientific meetings in statistical fields.

Virginia Academy of Science Statistical Meeting

The Virginia Academy of Science Chapter of the American Statistical Association and the Section of Statistics of the Virginia Academy of Science will hold their major annual meeting at the Jefferson Hotel, Richmond, Virginia, on May 13 and 14, 1960. All members of the American Statistical Association are cordially invited to attend this meeting. The complete program is as follows:

Friday, May 13, 1960 9:00 a.m.

9:00 Introductory Remarks by the Chairman

9:10 Some Further Studies on Detection of Defective Quantities
Rolf E. Bargmann and Frederick Leroy Carter, Jr., Virginia Polytechnic Institute

9:30 Some Compound Binomial Distributions
Malcolm Turner, Medical College of Virginia

9:50 Sequential Allocation of Patients in Clinical Trials (Preliminary Report)
Robert J. Taylor, Virginia Polytechnic Institute

10:10 Intermission

10:20 On the Combination of Errors in Agricultural Research
N. R. Thompson, Virginia Polytechnic Institute

10:40 The Measurement of Risk in Agricultural Production
Paul H. Hoepner, Virginia Polytechnic Institute

11:00 The Reliability and Cost Considerations of Systems with Spare Components
Donald F. Morrison, National Institute of Mental Health and Virginia Polytechnic Institute

11:20 Some Tests for Outliers
Charles Quesenberry, Virginia Polytechnic Institute

Friday, May 13, 1960, 2:00 p.m.

2:00 A Soybean Experiment Interpreted with Respect to Genetic Models
Theodore W. Horner, Booz, Allen Applied Research, Inc. and Charles R. Weber, Iowa State College

2:45 Business Meeting

3:15 A Study of Soldier Preferences for Various Blends of Roasted and Ground Coffees in Three Strengths
Elie Weeks, Quartermaster Research and Engineering Field Evaluation Agency

3:35 Contributions to the Method of Paired Comparisons
H. A. David, Virginia Polytechnic Institute

4:05 Some Asymptotic Results in a Balanced Paired-Comparisons Experiment
B. J. Trawinski, Virginia Polytechnic Institute

Saturday, May 14, 1960, 9:00 a.m.

9:00 Meteorological Applications of Power-Spectrum Analysis
Ronald E. Walpole, Roanoke College

9:20 Multivariate Analysis of Incomplete-Variables Designs
Irene Monahan, Virginia Polytechnic Institute

9:40 Some Contributions to the Evaluation of Pearsonian Distribution Functions
John White, Virginia Polytechnic Institute

10:00 Intermission

10:10 The Prediction of College Success from Tests and High School Achievement
John M. Long, College of William and Mary in Norfolk

10:30 Optimum Allocation in Regression Split-Plot Experiments
R. M. DeBaun, American Cyanamid Corporation and V. Chew, U. S. Naval Weapons Laboratory

10:50 Conditional Distributions Arising from Variation of Parameters in a Non-Linear Response Function
Max H. Myers and David C. Hurst, Virginia Polytechnic Institute

Annual Meeting of Operations Research Society

The eighth annual (17th national) meeting of the Operations Research Society will be held May 18 to 20, 1960 at the Statler-Hilton Hotel in New York City. Sessions are scheduled on operation research in the corporation, business systems simulation, inventory control, optimizing in equipment design, and new developments. Others may be added.

Further information about the meeting may be obtained from Max A. Woodbury, Meeting Chairman, Department of Mathematics, New York University, New York 53.

Summer Sessions at Michigan State University

The 1960 summer program of the Department of Statistics of Michigan State University will consist of two five-week sessions: June 23 to July 28 and August 1 to 31, and a concurrent ten-week session; June 23 to August 31. The faculty of the summer sessions will include DeHardt, Fox, Hannan, Kraft, Proctor, Rubin, Stapleton, and Sukhatme.

The ten-week session includes courses in The Analysis of Variance, and in Probability Theory, as well as introductory courses in business statistics, engineering statistics, and less specifically oriented courses for undergraduate and graduate students. The first five-week session includes an introductory course and a course in Correlation Analysis. During the second five-week session courses in The Analysis of Variance and in Correlation Analysis are offered. In addition credits may be earned by more advanced students through a variety of directed problem and research courses throughout the summer.

A student may choose either or both of the five-week sessions or the ten-week session. Further information may be obtained from Professor Kenneth Arnold, Acting Head, Department of Statistics, Michigan State University, East Lansing, Michigan.

Cornell Industrial Engineering Seminars

The annual industrial engineering seminars sponsored by the Department of Industrial and Engineering Administration, Sibley School of Mechanical Engineering, Cornell University, will be held at Cornell June 14-17, 1960. These seminars are designed for management personnel in industrial engineering, production engineering, engineering administration, research and development, quality control, production control, cost control, materials control, purchasing and data processing.

Participants will enroll in one of the following seven groups as well as attending general sessions:

(1) Industrial Management
(2) Engineering Administration
(3) Operations Management of the Smaller Company
(4) Work Measurement
(5) Systems Simulation Using Digital Computers
(6) Statistical Decision-Making: Theory and Applications
(7) Statistical Reliability Analysis: Theory and Applications

Speakers and discussion leaders will include specialists from both industry and the staff of Cornell University.

For further information write J. W. Garrett, Seminars Coordinator, Department of Industrial and Engineering Administration, Upson Hall, Cornell University, Ithaca, N.Y.

Traineeships for Public Health Statisticians

The Public Health Service has announced the availability of traineeships for graduate training of professional public health personnel during the 1960-61 academic year.

Traineeships in public health statistics are available to qualified persons. They provide stipends from a minimum of $250 per month for a post-bachelor candidate to a maximum of $400 per month for a post-doctoral candidate and additional allowances for dependents, travel of the trainee, and academic tuition and fees. The trainee may attend any school that offers a nationally recognized graduate or specialized public health training program in his professional field.

Additional information and application forms may be secured from the Division of General Health Services, Public Health Service, U.S. Department of Health, Education, and Welfare, Washington 25, D.C. Persons interested in training beginning in the fall should apply at once.

Statistical Summer Seminar at Dedham, Mass.

The Statistical Summer Seminar will hold its tenth meeting July 18-25, 1960 at the MIT Endicott House, Dedham, Massachusetts to discuss "The Use of Computers in the Sixties—Boom or Bust". Dr. Meyer A. Efroymson of Esso Research and Prof. Fred C. Leone of Case Institute of Technology are organizing a program which will include several noted speakers.

This seminar, a private non-profit organization, was organized in 1948 by Professors Frederick Mosteller and

John Tukey to explore new fields of application for statistics. At present it is under the direction of Dr. Milton E. Terry of the Bell Telephone Laboratories.

The registration fee of $175.00 includes comfortable living accommodations. Grants-in-aid are available to government and academic personnel. For further information write to Dr. Eugene W. Pike, Lincoln Laboratory, Lexington 73, Massachusetts.

Rochester Summer Programs in Quality Control

The 17th annual Statistical Quality Control Programs for the Chemical and Processing Industries will be held at the Rochester Institute of Technology, Rochester, N.Y., June 13-30, 1960. Two courses and a special seminar will be offered. The first course, "Industrial Statistics and Quality Control for the Chemical and Processing Industries," will run from June 13 through June 22. The second or more advanced course, "Design of Experiments in the Chemical and Processing Industries," is scheduled for June 23 through June 30. The special two-day Applications Seminar will be held June 21 and June 22. This seminar, which is a new feature of the 1960 programs, is divided into four half-day sessions. It will offer registrants an opportunity to learn and study practical applications of the basic material learned during the preceding seven-day beginning course. Those registered for the more advanced course may also attend the seminar if they desire.

Further information about the programs may be obtained from Harold M. Kentner, Director of Extended Services, Rochester Institute of Technology, Rochester 8, N.Y.

Loyola Psychometric Laboratory

The Administration of Loyola University, Chicago, Illinois, has recently given official recognition to the Loyola Psychometric Laboratory. The Laboratory has been in operation for approximately two years, both for research and for the training of graduate students in psychometrics, and publishes limited editions of its research activities.

The staff includes the following persons: H. J. A. Rimoldi, M.D., Ph.D., Director; J. R. Devane (Ph.D.); Sister M. Canisia (Ph.D.); T. F. Grib (M.A.); and J. V. Haley (M.A.).

A.A.A.S. Section K Sessions for Contributed Papers

Section K—Social and Economic Sciences—of the American Association for the Advancement of Science will hold sessions for contributed papers at the annual meeting of the A.A.A.S. in New York, December 26-31, 1960. Association members interested in presenting a paper at these sessions should forward titles and abstracts not later than September 1 to Donald P. Ray, Secretary of A.A.A.S. Section K, National Institute of Social and Behavioral Science, George Washington University, Washington 6, D.C. Papers should be based on research recently completed by the author. The American Statistical Association is an affiliate member of the Section on Social and Economic Sciences of the A.A.A.S.

BIOSTATISTICIANS

needed by Pennsylvania State Health Department to work on biostatistical aspects of public health programs. Merit System, three weeks' annual leave, sick leave, state retirement and social security benefits, annual increments. Supervisory opening (Salary range $6,390-$8,163) requires four years' experience and M.P.H. Next lower position (Salary range $5,268-$6,716) requires two years' experience and college graduation. For further information or applications, please contact

Mr. Andrew L. McCabe, Director of Personnel
Pennsylvania Department of Health
P.O. Box 90, Harrisburg, Pennsylvania.

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International STATISTICAL ACTIVITIES

FRANCE

The **Statistical Society of Paris** held eight meetings during 1959, at which the following papers were presented:

1. Les prix de revient de travaux de mécanique. Maurice Dumas (January 21).
2. Recherche de critères pour la délimitation d'une agglomération parisienne. Anfre (February 18).
3. Investissement et amortissement. Pierre Cauboue (March 18).
4. Etude sur la lecture de la presse. Jacques Desabie (April 15).
5. Structure factorielle des tables de mortalité. Sully Ledermann (May 20).
6. Des procédés statistiques en matière de circulation routière. Goldberg (June 17).
7. Aperçus statistiques sur la liquidation de l'Union Européenne de paiements et le financement de l'accord monétaire Européen. Charles Pengalou (October 21).
8. Mesures de productivité dans le transport aérien. Gérard Pile (November 18).

—*Journal de la Société de Statistique de Paris*

GERMANY, WEST

The **Bavarian State Bureau of Statistics** (BSL) issued, on the occasion of its 125th anniversary in 1958, a publication entitled *Die amtliche bayerische Statistik und das Bayerische Statistische Landesamt von 1933 bis 1958.* This account of recent history, edited by the President of the BSL, **Dr. K. E. F. Wagner,** is intended to describe the present use of statistics as well as all provisions of the law concerning the organization of the statistical service and the implementation of official surveys in Bavaria.

An announcement of this publication was received by the ASA from Dr. Wagner, a member of the International Statistical Institute, who stated also that he would retire from the Presidency of the Bavarian State Bureau of Statistics in March 1960, for reasons of health.

GREECE

The **Hellenic Statistical Society** announces that the Administrative Council of the Society is now composed of the following members. E. Margaritis, President; K. Athanassiades and D. Kappos, Vice Presidents; D. Konidaris, Secretary General; T. Keramidas, A. Chassakis, J. Liakis, G. Theodorakis, M. Gevetsis.

—Hellenic Statistical Society, Athens

HUNGARY

A **Symposium on Biometry,** organized by the Janós Bólyai Mathematical Society and the Hungarian Academy of Sciences, was held at Budapest, September 7-9, 1959. Participants included mathematicians, statisticians, physicians, and biologists from a number of European countries. On the first day of the symposium there were two plenary sessions; the remainder of the symposium was conducted in separate sections on medicine and demography, and on agriculture.

Speakers at the plenary sessions included: A. Rényi (Budapest), who read a paper on measures of association between random variables; B. A. Sevast'ianov (Moscow), who discussed branching processes as models for population growth; D. J. Finney (Aberdeen)—on efficient design of experiments; I. Juvancz (Hungary); J. Perkal (Wroclaw); and V. Myslivec (Prague), who discussed problems in mathematical statistics which arise in connection with the use of radioactive isotopes in experimental work.

The paper "Demography and Biometry" by A. Ia. Boiarskiĭ, which was read before the demographic section of the Symposium on Biometry, has been published in *Demográfia* (Budapest, 1959, Vol. 2, No. 4), together with summaries of the discussion by György Acsádi, András Prékopa, Hans Grosse, and György Péter. The paper and discussion are summarized in English.

Statisztikai Szemle, Budapest
—*Vestnik Akad. Nauk SSSR,* Moscow

ITALY

The editors of the journal *Statistica,* published by the Universities of Bologna, Padua, and Palermo, have announced the publication of a volume *Bibliografie* (550 pages, 5,000 Italian lire). The volume contains a compilation of bibliographies of the work of more than 100 contemporary scholars who have contributed and continue to contribute to the progress of the disciplines of statistics. The list of authors follows:

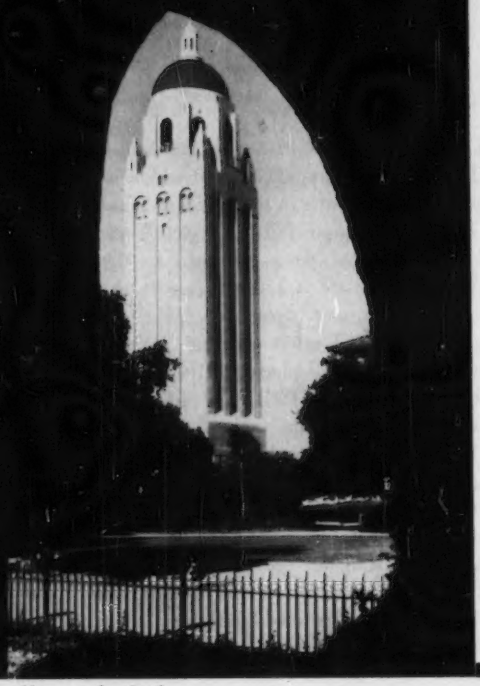
Alanís Patiño, Albertario, Allais, Amoroso, Anderson, Bachi, Barbensi, Barberi, Bartlett, Benini, Beveridge, Bliss, Boldrini, Bonferroni, Bowley, Brambilla, Bresciani-Turroni, Burgdörfer, Cantelli, Castellano, Coppini, Cornish, Costanzo, Cox, Dal Pane, Da Silva, Day, De Finetti, Del Chiaro, D'Elia, Del Vecchio, Demarco, Demaria, De Meo, Deming, De Polzer, Derksen, De Vergottini, De Wolff, Di Fenizio, Divisia, Dupriez, Einaudi, Fanno, Federici, Ferrari, Finney, Fisher, Fortunati, Fréchet, Frisch, Fürst, Galvani, Gini, Glass, Guerreiro, Guilbaud, Gumbel, Hamaker, Henry, Hersch, Hill, Hopkins, Hostelet, Hotelling, Jannaccone, Jordan, Kellerer, Kendall, Keyfitz, Kuczinski, Lasorsa, L'Eltore, Lenti, Leontief, Livi, Loveday, Luzzatto Fegiz, Mahalanobis, Maroi, Marshall, Medici, Miami-Calabrese, Mills, Molinari, Montalenti, Morice, Mortara, Niceforo, Notestein, Palomba, Papi, Parenti, Pearson, Perroux, Pietra, Pizzetti, Pompilj, Ptoukha, Rappard, Repaci, Rice, Risser, Ros-Jimeno, Roy, Rueff, Saibante, Sagoroff, Salvemini, Sauvy, Savorgnan, Shaul, Sibirani, Somogyi, Steve, Sukhatme, Tagliacarne, Tippett, Tizzano, Van Dantzig, Vanoni, Vianelli, Wilks, Winkler, Wishart, Wold, Yates, Zingali.

The volume *Bibliografie* may be ordered from

Direzione Della Rivista "Statistica"
Instituto di Statistica dell'Università
Piazza Scaravilli, 2
Bologna, Italy

UNITED KINGDOM

University College of Wales at Aberystwyth has set up a Department of Statistics as from the 1st January 1961, with Mr. D. V. Lindley as Professor and Head of the Department. A diploma in Mathematical Statistics will be organized, and students will be accepted to read for a PhD. degree. The Department is expected to contain three other teaching officers in addition to the Professor.



Hoover Institution

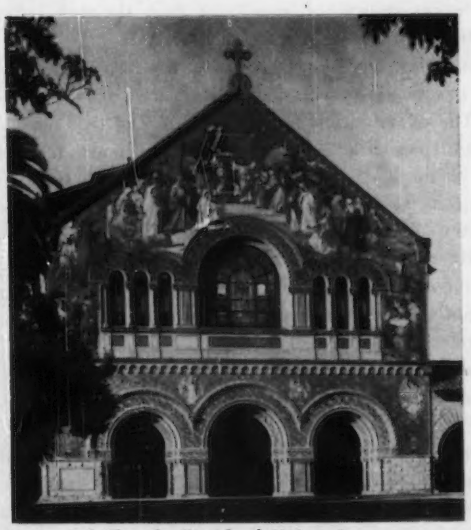
120th ANNUAL MEETING of the AMERICAN STATISTICAL ASSOCIATION

Stanford University, Stanford, Calif.
AUGUST 23-26, 1960

Meeting jointly with:

- The Institute of Mathematical Statistics
- Biometric Society, ENAR and WNAR
- The Econometric Society
- Western Economic Association
- Western Farm Economic Association

San Francisco Bay Bridge (Courtesy San Francisco Chamber of Commerce)



Memorial Church, Stanford University

STANFORD is located about 30 miles south of San Francisco, one of the country's most interesting cities. San Francisco Bay with its bridge, the Golden Gate, Golden Gate Park, the steep hills with their picturesque cable cars, the Mission Dolores, Chinatown, the Embarcadero and Fishermen's Wharf, the fine restaurants and famous night spots, all make San Francisco a visitor's delight. Across the Bay are Berkeley and the University of California. Just north of the Golden Gate are Mt. Tamalpais and the Muir Woods with their giant redwoods. About 80 miles south of Stanford is the Monterey Peninsula with its famous 17-mile drive, the old city of Monterey—the capital of Spanish California, and the charming town of Carmel—favorite of writers and artists. Down the coast are many attractions of Los Angeles and San Diego.

The Palo Alto climate is at its best in August. Days are sunny and warm, but not humid. Nights are cool.

For a preview of some of the highlights of the meeting and an account of local arrangements, see the item "1960 Annual Meeting" in the News Section.

FEDERAL STATISTICAL ACTIVITIES

Program for the Health Examination Survey

Two main approaches are now utilized in collecting data for the U.S. National Health Survey program. One is the Health Interview Survey, now in its third year of field operation. This survey provides nationwide estimates for a wide variety of topics, including volume of physician and dental visits, days of disability, time lost from work and school, accidental injuries by type, physical impairments. The results of the survey are published as *Health Statistics from the U.S. National Health Survey*—by topic in Series B and by population group in Series C.

The second main approach is the Health Examination Survey. Whereas the interview survey is designed primarily to obtain information on the demographic, economic and social aspects of health, the examination survey is aimed at producing standardized and clinically determined measures of the prevalence of chronic disease and distributions of numerous precisely measured physiological variables for the civilian population of the United States.

The procedures and content of the Health Examination Survey, as now planned, are based on a series of methodological studies and pretests carried out in fiscal years 1957, 1958 and 1959. Special pretests, conducted in differing types of communities and in successively closer approaches to production conditions, were held in Washington, D. C., in June 1958; Fort Wayne, Indiana, in March 1959; and Cresco, Iowa, in April 1959. Scientific equipment and a mobile examination center for one examining team were procured in 1959. During fiscal year 1960 the examination and survey processes, having passed through initial testing, are entering gradually into production status, with a very limited number of examinations.

Specific objectives.—The first phase of the Health Examination Survey will be directed toward obtaining national estimates for adults in the noninstitutional population. The estimates to be produced are:

(1) Prevalence of certain chronic diseases and impairments such as heart disease, diabetes, arthritis, rheumatism, dental conditions, and manifest malformations or crippling conditions.

(2) Distribution of certain physiological characteristics such as levels of blood pressure and blood serum cholesterol, thresholds of hearing, and visual acuity.

(3) Distribution of certain body measurements such as height, weight, shoulder width, girth, and skinfold thickness.

The sample.—The sample for the first phase will be a probability sample of the adult noninstitutional population of the United States. It will be a highly stratified sample and, in particular, will be controlled on geographic location and population density. The total sample will consist of approximately 6,000 persons and, hence, each examinee will represent some 20,000 persons in the total U.S. population. These 6,000 persons will be examined at 42 locations or "stands," each of which is in one of the primary sampling units in the National Health Survey sample. Three of the stands fall in the New York Standard Metropolitan Statistical Area and two in the Chicago SMSA. At each stand about 150 people will be examined.

Mobile equipment and personnel.—The examination center consists of three interconnected mobile units set up at a convenient central place for the duration of one stand. These units contain facilities for taking and processing X-rays; laboratory equipment for determination of hematocrit level, and for urinalysis; special equipment for measuring height and weight; a soundproof booth for audiometry; and space for reception, history interviewing, physical and dental examinations.

The examining staff on each team will include two each of the following specialists: physicians (senior residents or fellows in internal medicine), dentists, registered nurses, medical technicians, and medical history interviewers. Since these people cannot be maintained in the field indefinitely, a rotation plan calls for replacement of some staff after each 2- or 3-month period. To maintain the necessary high degree of standardization of examining procedures, specialized training is provided for all the staff.

Field procedures at each stand.—In advance of the start of each stand, appropriate health department and medical, dental and osteopathic societies are informed of the general plans, and their cooperation sought. The potential examinees are obtained from a sample of households through interviews conducted by the Bureau of the Census for this specific purpose. The content of the interview is substantially similar to that of the current Health Interview Survey of the National Health Survey program, and persons eligible for examination are asked to accept appointments at the examination center. Eligibles who do not accept are called upon again in an attempt to resolve any reluctance, doubts or fears through fuller explanations, citing personal benefits, etc.

The interviewing phase starts about 2 weeks in advance and is practically concluded before the examinations begin. The examination phase runs for 2½ to 3 weeks. The entire span of activities for one stand many take as long as 5 months, but the time between the start of examinations at one stand and the start at the next is usually 4 weeks. Thus there is overlapping of the work at the different locations: for example, while examinations are going on in one area, interviewing is going on in another, and local arrangements are being made in a third.

Procedures of the examination.—Inclusion of the various procedures is dictated by several considerations. Because the survey is noncompulsory, and a high response rate must be obtained in a preselected sample of people, a first requirement is acceptability to the examinee This means that the examination must be performed in a single visit and in a reasonable length of time—on the

average two hours or less; that examinees can be asked to undress only to the waist; and that there be no internal examinations.

Diagnoses must be limited to those for which standard diagnostic classifications and criteria exist, and for which simple, practical, sensitive, and valid procedures are available. In addition, the selection of diagnoses depends on the public health significance of conditions, and a sufficiently high prevalence to yield satisfactory numbers in a small population sample.

The final consideration is that all procedures in the examination are sufficiently standardized so that reproducible results can be obtained.

—Theodore D. Woolsey, Assistant Director, U.S. National Health Survey, Public Health Service, Department of Health, Education, and Welfare

New Survey of Residential Alterations and Repairs

A new survey has been begun by the Bureau of the Census to obtain quarterly data on expenditures for residential maintenance, repairs, additions, and alterations. This survey is designed to provide quarterly information on an area which in dollar aggregate is relatively large, but on which practically no measures of actual expenditures are now available. Information will be collected on expenditures for different types of work (additions, alterations, papering and painting, heating maintenance and repair, plumbing maintenance and repair, and so on), expenditures by owners and renters, expenditures on properties of different sizes, and expenditures classified by method of doing the work (whether done by self, by paid help or on contract, or by a combination of these). Published tallies will depend upon the detail with which reliable information can be obtained.

The survey utilizes both household interviews and mail questionnaires. Information from owner-occupants, from renters and from resident owners of small rental properties is being obtained by personal interviews; information from all nonresident owners and from resident owners of large rental properties is being obtained by mail questionnaires.

The interview phase of the survey incorporates an experimental design to provide information on differences due to various recall periods, different respondents within a household, presence of telescoping (reporting expenditures made prior to the survey period as having occurred during the survey period), and the conditioning effect from repeated interviews with the same household. The objective of this experimental design is to provide the basis for improved methods of data collection and to increase the reliability of the results.

Each month, a new sample of households is brought into the survey. These are interviewed four times, using one, three, and six month recall periods. For second and subsequent interviews with a household, the enumerator will have with him a record of expenditures previously reported by the household. This will be used to assume that expenditures previously reported will not be repeated. In about half of the sample, a specific respondent (head, wife, or head and wife) is being predesignated in order to observe the effect upon the amount of expenditures reported when different household members are interviewed.

The survey began early in February, when 600 households were interviewed. The sample size is being increased to 1,200 in March, to 1,800 in April, May, and June and to 2,400 thereafter. While the sample design provides for monthly samples for experimental purposes, publication of data will be on a quarterly basis.

The supplementary mail survey of a sample of owners of large rental properties is being started to cover the January-March quarter.

—Samuel J. Dennis, Chief, Construction Statistics Office, and John Neter, Statistical Research Division, Bureau of the Census, Department of Commerce

Revised Program for Marriage and Divorce Statistics

The National Office of Vital Statistics has inaugurated a new method of collecting national marriage and divorce statistics closely paralleling that for births and deaths. First publications to reflect the new data collection procedures will be for 1960.

For some years the NOVS has relied upon a voluntary system under which cooperating State officials prepared, to Federal specifications, detailed tabulations of marriages and divorces. While this system had the advantage of operating at minimum cost to the Federal Government, it had certain weaknesses, in addition to placing a considerable burden upon State vital statistics offices. Uniform definitions and tabulations were difficult to attain in a program so widely decentralized. Routine checks on completeness and accuracy of reporting were difficult to apply, and the system lacked flexibility. It failed to meet the needs of users of the data as reflected in consumer surveys. Efforts to improve this reporting system included establishment of reporting areas made up of States that met specified standards. Both the Marriage Registration Area, established in January 1957, and the Divorce Registration Area, established in January 1958, will have a continuing usefulness until all States are included in them. However, they cannot cure the inherent weaknesses of the pretabulated collection program.

The new program will collect a sample of the statistical report forms from States in the registration areas for marriages and divorces for regular annual processing similar to that of birth and death certificates. Detailed cross-tabulations will be prepared for the registration areas and briefer tables for States in the areas. This should provide a consistent series of annual tables of a type needed by the users. It cannot provide detailed national tabulations since some States lack central files of marriage and divorce records. To provide some basic national tabulations for 1960, data will be collected from sample counties outside the registration areas. For

this census year, benchmark data will be available on a national and regional basis. The sample is not designed to provide State tables for States outside the registration areas.

Sampling variability will be held within moderate bounds. The total sample of marriages will be 45,000 records, of divorces, 16,000; the minimum sample for States in the registration area, approximately 400 records.

—Hugh Carter, Chief, Marriage and Divorce Analysis Section, National Office of Vital Statistics, Public Health Service, Department of Health, Education, and Welfare

Recircularization of Scientists in the National Register

The National Science Foundation is now recircularizing scientists in the life and physical sciences for the National Register of Scientific and Technical Personnel. As used in the Register, the term "life sciences" includes agricultural, medical and biological scientists and psychologists; and "physical sciences" includes chemists, earth scientists, physicists, mathematicians, meteorologists, and astronomers. Revised questionnaires and specialties lists, as well as a brief report on the 1956-58 data, are being mailed to individual scientists. Registrations are expected to reach 250,000 by this recircularization.

In a cooperative operation for maintenance of the Register, the National Science Foundation gives support to eight professional scientific societies, each of which is responsible for a specific area of coverage. The eight contractors work with and through about 200 specialized societies affiliated with them. Registrations are secured by the societies, operating under common standards established by the Foundation. The scientific societies circularize individual scientists, members and nonmembers alike, to insure the most complete coverage possible. In addition to the eight professional societies, the Public Health Service acts as the registering society for sanitary engineers, and a somewhat similar arrangement is being developed for the U.S. Civil Service Commission in connection with its roster of Government scientists and engineers.

—Thomas J. Mills, Director Scientific Manpower Program, National Science Foundation

Report on Selected Quarterly National Income Series, 1947-58

A report on "Revisions of First Estimates of Quarter-to-Quarter Movement in Selected National Income Series, 1947-1958" has been prepared by the Office of Statistical Standards, Bureau of the Budget. For most users, the principal use of the quarterly estimates is in measuring change. The report deals with the extent of revisions of the quarter-to-quarter movement of selected national income series. Seasonally adjusted series are used throughout.

Numerical measures are developed for each series by comparing the first estimates of quarter-to-quarter movement with those now in use. The extent of revision is examined from three points of view. First, measures are derived of net average quarter-to-quarter movement and of bias (i.e., the extent to which the initial estimates of movement tend, on the average, to be too high or too low). Second, measures are derived of average quarter-to-quarter swing (i.e., absolute movement) and of average revision of swing. Third, the percentage of times the first estimates miss the direction of change is given for each series. Comparisons of initial with revised quarter-to-quarter movements for each of the selected series are shown in tables and charts.

From examination of the foregoing measures, the selected series have been grouped roughly in the following order, from least to greatest degree of revision:

Compensation of employees
National income
Personal income

Personal consumption expenditures
Gross national product
Corporate profits before tax

Gross private domestic investment

Proprietors' and rental income

This group ranking agrees with the general impression, among persons familiar with the source data, of the relative reliability of the first estimates published for the quarterly series. Generally speaking, the broad sweep of economic activity over time as shown in the initial estimates of quarter-to-quarter movement is confirmed by the revised estimates. Some series perform much better than others in this respect.

The report has been prepared as one of a number of technical reviews which the Office of Statistical Standards, Bureau of the Budget, expects to issue from time to time. These reports are intended (1) to provide users with more insight into the strengths and weaknesses of selected statistical series and thus improve interpretation and analysis; and (2) to provide the compiling agency and the Office of Statistical Standards with information needed to improve the statistical series and the data on which they are based.

The supply of "Revisions of First Estimates of Quarter-to-Quarter Movement in Selected National Income Series, 1947-1958" is limited. Single copies may be obtained from the Publications Unit, Bureau of the Budget, Washington 25, D. C.

—Raymond Nassimbene, Executive Assistant for Statistical Techniques and Audits, Office of Statistical Standards, Bureau of the Budget

Among Recent Publications—

Trends in Output per Man-Hour in the Private Economy, 1909-58 (Bulletin No. 1249), issued by the Bureau of Labor Statistics, Department of Labor. Presents indexes and average rates of change in output per man-hour for the private economy, agriculture and nonagricul-

ture for the post-World War II period, 1947-58, and the long-term period 1909-58; and estimates for manufacturing and nonmanufacturing for 1947-57. Two types of measures are included, one based on man-hour data from the Bureau of the Census and the other based primarily on man-hour data from the Bureau of Labor Statistics; both are related to real (constant dollar) product for the private economy. The report also includes an examination of the long-term trends in output per man-hour and a discussion of some of the major factors underlying the long-term growth (e.g., changes in technology, amount of plant and equipment per worker, electrical energy used per man-hour, research and development, and the growth in numbers of clerical, professional and administrative workers). A description of data sources and methods of computation is included in an appendix. Available at 50 cents a copy from the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

Technical News Bulletin (January 1960, vol. 44, no. 1)—Special Issue on Applied Mathematics, published by the National Bureau of Standards, Department of Commerce. Describes some of the recent work of the Statistical Engineering Laboratory, with brief reports of many aspects of the Bureau's work in applied mathematics. An article on "Mathematical Research on Reliability Prediction" includes a brief description of recent research results on the "robustness" of statistical techniques for life testing which are applicable, for example, to the testing of electronic components used in complex systems. Recent work on design of experiments is described in an article on "Statistical Planning of Physical Science Experiments." Other topics covered in the special issue include reports of the use of high-speed computers as an aid to scientific research, and a description of the forthcoming "Handbook of Mathematical Functions," which will include a chapter on probability functions. Available at 15 cents a copy from the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

Health Statistics from the U.S. National Health Survey, issued by the Public Health Service, Department of Health, Education, and Welfare. First report in Series D (results of developmental and evaluation studies) and additional reports in Series B (results from household interviewing, by topic) and Series C (results from household interviewing, by population group):

Series D 1, "A Study of Special Purpose Medical-History Techniques," describing the methodological study carried out in developing the medical-history questionnaire and appropriate interviewing techniques for use in the Health Examination Survey of adults in general population samples. The study was conducted by the Survey Research Center of the Institute for Social Research, University of Michigan, under contract with the Public Health Service. Charles F. Cannell and Morris Axelrod of the Institute directed the project and were responsible for the report. (PHS Publication No. 584-D 1, 30 cents)

Series B 12, "Chronic Respiratory Conditions Reported in Interviews, United States, July 1957-June 1958," presenting data on numbers and rates for four diagnostic categories (asthma-hay fever, chronic sinusitis, chronic bronchitis, and other chronic respiratory diseases exclusive of tuberculosis); medical attention status; and associated days of restricted activity and bed disability. (PHS Publication No. 584-B 12, 30 cents)

Series B 13, "Heart Conditions and High Blood Pressure Reported in Interviews, United States, July 1957-June 1958" presenting data on these chronic conditions in 14 detailed tables and 9 charts, by age, sex, medical attention, and associated days of restricted activity and bed disability. Text includes a discussion of the differences in estimates of prevalence obtained through different survey techniques. (PHS Publication No. 584-B 13, 30 cents)

Series B 14, "Dental Care, Interval and Frequency of Visits, United States, July 1957-June 1959," presenting 14 detailed tables on interval since last dental visit, by age, and a second group of 14 tables on frequency of dental visits—both groups classified by sex, urban-rural residence, region of the country, race, family income, and education. (PHS Publication No. 584-B 14, 35 cents)

Series C 2, "Veterans, Health and Medical Care, United States, July 1957-June 1958," presenting detailed data on selected health characteristics of veterans and nonveterans and the extent to which these two groups utilize the services of physicians and hospitals; and classification of veterans in three war groups (Korean, World War II, and World War I combined with the Spanish American War). (PHS Publication No. 584-C 2, 40 cents)

Copies of all these reports may be purchased at the prices indicated from the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

Study of Employment, Growth, and Price Levels.—The Joint Economic Committee, U.S. Congress, has concluded its special study of "the problems of providing maximum employment and an adequate rate of economic growth, as well as maintaining price stability and preventing inflation," which was begun in March 1959.

Employment, Growth, and Price Levels, the Committee Report on the study, was issued late in January as Senate Report No. 1043. It includes chapters on the Nation's economic objectives, past performance and future potential of the U.S. economy, fiscal policy, monetary policy, debt management, policies to improve the structure of the economy, the farm problem, and America's changing position in the world economy. Each of these topics is also dealt with in the separate statement presenting the minority views, included in the document. The report also contains supplemental and additional views of various Committee members, and the appendixes give the text of the Senate Concurrent Resolution which authorized the study and a list of the hearings, study papers and reports prepared for the

study. Available (156 pages, 50 cents) from the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

Staff Report on Employment, Growth, and Price Levels, issued late in December, is a comprehensive report prepared for the Committee as a factual and analytical examination of the problems and possibilities involved in the study. It draws on the materials supplied by the nearly 100 witnesses in the hearings held by the Committee and the special study papers. A number of chapters contain analyses of particular subject fields by members of the special study staff and the permanent staff of the Committee. Available (488 pages, $1.50) from the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

In addition to the Committee Report and the Staff Report, published materials resulting from the study include the hearings (10 parts) conducted by the Committee and the 23 special study papers prepared by outside experts and members of the Committee staff. The list of published hearings and study papers is included in the Committee Report, and is also available separately from the Joint Economic Committee, Senate Post Office, Washington 25, D. C.

Explanation of the Development of Motor Carrier Costs with Statement as to Their Meaning and Significance (Statement No. 4-59), issued by the Cost Finding Section of the Bureau of Accounts, Cost Finding and Valuation, Interstate Commerce Commission. Provides a minimum description of the nature and characteristics of motor carrier costs, the principles underlying the segregation and treatment of the out-of-pocket (long-run variable) costs, the joint costs, the constant costs, and the significance which is attached to each of these elements of cost from the standpoint of rate making. The present study reflects a number of changes in the cost finding procedures for motor carriers, but does not change any of the cost finding theories which were previously advanced in Statement No. 1-54. Available at 65 cents a copy from the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

Teacher Turnover in the Public Schools: 1957-58, issued by the Office of Education, Department of Health, Education, and Welfare. Presents data on total teaching staff and the number of teachers entering and leaving the public schools during two periods: the 1957-58 school year and the summer of 1958. The study is based on information supplied by a representative sample of school districts in the United States, stratified on the basis of pupil enrollment; it is planned to repeat the survey, using the same sample, for the school year 1959-60. The report contains information on the number of teaching staff additions, classified in three categories: those with no previous teaching experience, those with experience who were re-entering after an absence, and those transferring from another school district. From data on the total number of teachers separated from local school districts, estimates are made of total separations and of number of persons leaving the teaching profession during the two periods. The estimate of loss to the profession was obtained on the basis of the total number of persons leaving all school districts less the total number of those transferring between school districts. Teachers are classified by sex and by teaching level. Estimates are for continental United States by enrollment status; no data are presented for either regions or States. The report also includes a detailed discussion of the sample design, response rates, and sources of error. Available at 30 cents a copy from the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

Statistics of Bonds Sold for Public School Purposes, October 1953-June 1959, issued by the Office of Education, Department of Health, Education, and Welfare. Contains statistics needed for projections of school requirements, compiled from data collected by *The Bond Buyer* and by the Investment Bankers Association of America, Inc. Data are included on number of issues, value of issues, and net interest cost of bonds sold for public school purposes for the United States and by States. National data are also provided on distribution by size of issue, by interest cost, and by type of government issuing the bonds. Most of the statistics are for school-year periods (July through the following June), but some are for quarterly or monthly periods. The breakdowns are more comprehensive than those previously available. It is intended to issue supplements from time to time to update the statistics. Available report OE 22001) from the Publications Inquiry Unit, Office of Education, Department of Health, Education, and Welfare, Washington 25, D. C.

Survey of Public School Classroom Shortages in the Fall of 1959 in Borrowed-Up Districts, issued by the Office of Education, Department of Health, Education, and Welfare. Provides data on the shortage of classrooms in school districts which have exhausted all sources of borrowing for construction that are available to them. The survey is based on a telegram to the chief State school officers, and data are available from 45 of the 50 States. Respondents were instructed to utilize the same definitions of classroom shortage and enrollment used in the annual Office of Education survey of enrollment, teachers and school housing. Available (report OE 20011) from the Publications Inquiry Unit, Office of Education, Department of Health, Education, and Welfare, Washington 25, D. C.

(ALSO SEE PAGE 25)

THE TEACHING OF STATISTICS IN JAPAN*

by

Yoshiyuki Baba

Kohnan University, Japan

and

Shozo Arita

Shiga University, Japan

The Development of the Science of Statistics and of the Teaching of Statistics before World War II

Statistics was introduced in Japan in the early years of Meiji Era (1868-1912). In the beginning, Dutch and French literature was depended upon, but in due time the Japanese statisticians turned to German statistics. Haushofer, Rümelin, Engel and others were used. Government statisticians were then the main force in the study of statistics, and Kyoji Sugi and Ayatoshi Kure were the two most outstanding of these. Since about 1900, the center of statistical study has gradually shifted to universities where, with the introduction of German social statistics (Sozialstatistik), the study was broadened as well as deepened. Iwasaburo Takano and Seiji Takarabe were leading figures. The works of G.v. Mayr were especially regarded.

It was after World War I that British and American statistics gained increasing popularity in Japan. The inflow of this new statistics created a strange situation, where the two heterogeneous trends of British and American mathematical statistics and German social statistics lived together. These two were entirely different in nature and substance. German social statistics was a social science which subordinated methodology and emphasized statistical survey, while British and American statistics was a formal science or a methodology, mainly supported by the statistical methods of K. Pearson, A. L. Bowley, and G. U. Yule. The latter made no distinction between nature and society in application. Strictly speaking, it was applied mathematics. This situation of two opposing trends existing together gave the Japanese statisticians of the day a chance to re-examine the substance of both schools. As a result they reached a unification of statistical survey and statistical analysis in which they framed and developed methodological (non-mathematical) statistics peculiar to the social science field. Torazo Ninagawa (Kyoto University) and Hiromi Arizawa (Tokyo University) made great contributions in this unification. In Japan today, "social statistics" as it is called is usually defined in this sense. Demography also developed along with statistical business surveys in the field of economic statistics.

In the natural science field, the theories of probability of Laplace, Gauss, and Quetelet should be mentioned. The theory of R.v. Mises was introduced later in the field of basic sciences, and the biometrics of Galton and K. Pearson was introduced to the field of biological science.

Statistics was first taught in Japanese universities in the early years of Meiji Era. In the beginning, however, it was taught by foreign teachers, and it was not until after some time that it was taken over by Japanese scholars. Iwasaburo Takano became professor of statistics at Tokyo Imperial University in 1903. Statistics was put into university curricula at Keio, Waseda, Meiji, Senshu, Chuo, Ritsumeikan and other private universities as well as at Tokyo Commercial High School. Right after World War I, the faculty of economics was set up independently at the imperial universities in Tokyo and Kyoto, and the course in statistics was enriched in great measure. In many parts of the country, commercial high schools were established and statistics was taught at these schools. In the faculties of those universities where natural sciences were taught exclusively, lectures on the theory of probability and calculus of errors were given in the courses in mathematics and physics. In the biological science course, Pearsonian biometrics was taught.

The first training school for statisticians was established by Kyoji Sugi in 1883. Unfortunately, the school was closed three years later after turning out the first group of 36 graduates. After about 1899, seminars were frequently opened for the training of statisticians under the sponsorship of the national or local governments. Likewise, organizations of statisticians such as "The Statistical Society (TOKEI-GAKUSHA)" and "Tokyo Statistical Association (TOKYO TOKEI KYOKAI)" began to hold similar seminars.

The Japanese Government set up a Training Institute for Statisticians (a three month training course to be held once a year) in the Bureau of Statistics of the Cabinet in the year after the first census (1920) was taken. In addition the Bureau of Statistics of the Cabinet held a two or three week training course annually for the statisticians who were on the staff.

Present Situation of Statistics

The introduction and diffusion of mathematical or inductive statistics (especially that of R. A. Fisher),

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which had developed very rapidly in both Great Britain and the United States, was a remarkable phenomenon after World War II. Although inductive statistics had been explored by some of our mathematicians during the war, more advanced achievements of British and American scholars flowed in after the war. W. E. Deming of the United States visited Japan and endeavored to spread the doctrine. The theory of sampling, and the theory of testing of hypotheses were then adopted and developed. Its mathematical foundation, the theories of probability of Laplace, Gauss, and others, was re-examined and then R.v. Mises' "Frequency Theory" and Kolmogorf's "Axiomatic Theory" were introduced. In the field of natural science or technology, inductive statistical methods are being employed in statistical quality control and the design of experiments, and sampling surveys, market research and opinion surveys must be mentioned as practical applications of inductive statistics in social or humanities sciences. Recently, modern economics has been adopting inductive statistics, and linear programming and operations research have been introduced. Parenthetically, the application of inductive statistics to economic phenomenon gave rise to some criticisms. The criticisms range from an attack on overestimation of the virtues of sampling surveys and the application of the theory of testing of hypotheses to the disbelief in the possibility that social phenomenon as a whole are stochastic. These criticisms differ in tone and depth, but there were good reasons for them to go on in Japan. The main forces supporting these criticisms originate from the fruits of social statistics accumulated before World War II. It is a recognition that a close examination of conditions is necessary before mathematical methods can be applied to social phenomena. This view-point has acted toward the deepening of investigation into the nature and significance of statistics in social sciences. It has been necessary to study statistical surveys and to develop new uses suitable to the nature of social or economic phenomena. Some controversies have been carried on between social and mathematical statisticians, and the debate is still alive. It seems today that some mathematical statisticians are still disposed to question the validity of inductive statistics, while at the same time, a good number of social statisticians are willing to accept mathematical statistics only critically and conditionally.

In short, statistics in Japan at present is a compound of mathematical statistics and social statistics. The opposition between these two is easily noticeable, but the mutual permeation is also developing inconspicuously. The co-existence of two statistical schools opposed to each other may be inevitable in a sense, and the problem is not likely to be solved soon. This situation may produce an undesirable influence upon the development of statistics in some measure, but on the whole it would be rather desirable.

Present Status of the Teaching of Statistics

The teaching of statistics in Japan is intended to attain the following goals:

(a) to be a part of the general education. It is taken up by social education as well as school education.
(b) to form a part of professional education. In colleges and universities, it is taught as a branch or supplementary subject of social science or natural science courses such as economics or biological science.
(c) to train professional statisticians. There are two categories; 1, that taught at universities for advanced training and; 2, that taught at training schools or seminars for orientation or intensive training.

After World War II, it was felt very strongly that the scientific way of thinking had to be built up among the Japanese, and as statistics became to play a more and more important role as a tool in politics, economics, and industry, the improvement and diffusion of statistical knowledge became an important task in school education. In fact, this subject is taken up by school education from elementary school up to university level. Since in elementary, middle or high school the subject is taught sporadically in such courses as mathematics, science, or social studies, there are limitations and restrictions either preventing well-coordinated and integrated teaching of statistics or hampering enrichment of statistical teaching within specific courses. In order to overcome this difficulty, meetings or laboratory works of teachers under the guidance of educational administration offices became more active recently. The teaching of statistics for general education is conducted systematically as an independent subject only in universities.

Since the new education system was adopted in Japan after the war, not only is statistics taught as a course in the general education curriculum in universities but it is also given as a professional or as a supplementary course as occasion demands. One of the characteristics of the present education system is that great importance is attached to the general education curriculum. It is also true that statistics is included in the general education curriculum in many universities, indicating the importance attached to it. According to the inquiry undertaken by the authors, of the 43 national universities investigated, 29 universities, or 67 percent, have a course in statistics as a part of the general education curriculum. The general education curriculum forms the junior course, and is divided into a natural science course, a social science course and a humanities science course. Of the 29 universities referred to, 20 placed statistics in the social science course and seven in the natural science course. The remaining two universities include statistics in both courses, a very unique treatment.

The faculty of economics lays particular stress on the teaching of statistics as professional training. In every university the faculty of economics gives either a statistics course or an economic statistics course. Among the faculties of economics in the national universities observed, there are 17 faculties which establish a distinction between the required and the elective courses, and 11 faculties of the 17 include statistics or economic statistics

in the required courses. It is counted as 4 units, that is two hours a week during two semesters, a total of 60 hours. Some faculties have courses in mathematical economics, population statistics, social statistics, business statistics, and so forth. Many faculties have courses in econometrics and economic mathematics.

The Economic Branch of the Faculty of Economics, Tokyo University, has courses in elements of statistics (a required course, 4 units), economic statistics, mathematical statistics (2 units), and a statistics seminar (4 units). The Faculty of Economics, Kyoto University, has courses in Statistics (4 units), mathematical statistics (4 units), economic statistics (4 units), and an economic statistics seminar (4 units). The Economics Branch of the Faculty of Economics, Shiga University, has courses in economic statistics (a required course, 4 units), social statistics (4 units), and a statistics seminar (8 units). In addition, economic mathematics (4 units) and econometrics (4 units) are also taught. The Faculty of Economics, Kohnan University (a private university), has courses in economic statistics and economic mathematics.

In faculties of business management, and in faculties of commerce as well, statistics is regarded as fairly important, although not as important as in the faculties of economics. Many of them have courses in business statistics, and there are some which have courses in statistics, economic statistics, etc. In law faculties little importance is attached to statistics. The sociology branch of the faculties of literature gives the course in social survey. The faculties of education have the course in educational statistics.

The contents of lectures on statistics differ greatly between the opposing schools, reflecting the prevailing situation of the Japanese statistical world with two different undercurrents of mathematical and social statistics. In the realm of statistical mathematics, dealing with numerical data predominates. Sampling surveys, analysis of variance, the elementary theory of probability as well as such descriptive statistical procedures as data-gathering, tabular or graphic presentation, frequency distribution, averages, measures of dispersion, index numbers, time series analysis, correlation and regression, and the like constitute the teaching. The weight of the inductive statistical approach is ever increasing. In the realm of social statistics, the significance of statistics in social sciences or in economics, the nature of statistics, theory and techniques of statistical survey, the nature of the use of statistics, ratios, and averages are called in question. In addition, descriptive statistical procedures such as the analysis of time series, measures of dispersion or correlation are taken up under a certain condition, considering the limitations and the significance of their application to social or economic phenomena. Some inductive statistical procedures are also introduced.

In economic statistics, there are perhaps three cases: 1, the teaching of the elements of statistics with particular reference to economic phenomena; 2, the questioning of some particular methods of economic statistics (such as economic indices, or analysis of time series); 3, teaching the methodology and problems of individual departments of economic statistics (such as agricultural statistics, industrial statistics, price statistics). Some professors are disposed to include econometrics in the economic statistics course. Today, statistical quality control, marketing research, social accounting, linear programming, and operations research come to front.

In the faculties of natural sciences, the mathematics branch has lectures on probability and statistics, with particular emphasis on the modern mathematical theory of probability and its application. The physics, earth science, and astronomy branches teach probability statistics, statisical mechanics, calculus of exact observations, meteorological statistics, and statistical astronomy while the biological science branch teaches biological statistics and statistical genetics. In the faculties of engineering, inductive statistics, statistical quality control, statistics in civil engineering and the like are taught. In the faculties of medicine, public health statistics, and medical statistics are taught and in the faculties of agriculture, biological statistics and agricultural statistics are included.

In the graduate school, the research course of economics has such subjects as statistics, economic statistics, and mathematical statistics. The research course of social science, Tokyo University, gives a special course for the exclusive study of statistics. The composition is as follows:

a. The Master Course—social statistics (2), history of statistics (2), statistical organization (2), economic statistics (4), business statistics (4), mathematical statistics (8), probability and statistics (6), design of experiments (4), sampling survey method (4), statistical machines (4), stochastic process (2), group reading in statistics (2), statistics seminar (8).

b. The Doctor Course—social statistics (2), design of experiments (2), sampling survey method (2), mathematical statistics (4), physical statistics (2), industrial statistics (2), biological statistics (2), agricultural statistics (2), economic statistics (2), social survey (2), probability and statistics (2), psychological statistics (2), group reading in statistics (2), guidance in research work in statistics (8).

This is the only course for advanced training of professional statisticians now existing in Japan. Although the statistics seminar in the faculty of economics curriculum of a university is partly responsible for the orientation of professional statisticians, it is unsatisfactory due to the inadequacy of facilities and the lack of opportunities for practical exercise.

As a temporary expediency to meet the demand for statisticians from the administration and the business world, and for the purpose of orientation and training of statisticians in work, there are permanent institutions as well as short-term seminars.

As permanent education facilities, the following two are important at present:

a. Training Institute for Statisticians at the Bureau of Statistics, Office of Prime Minister—established in

1921 to furnish the staffs of national or local public corporations with the knowledge and techniques necessary for their statistical works. Training period, 6 months; Qualification, high school graduates.

b. Training School of Statisticians at the Institute of Statistical Mathematics of the Ministry of Education—established in 1947 to teach statistical mathematics necessary for statistical technicians. It has three classes: the basic class (Training period, 3 months; Qualification, high school graduates), the research class (Training period, 3 months; Qualification, junior college graduates), and the special class (Training period, 7-10 days; Qualification, junior college graduates).

There are seminars held for the purpose of training statistical officials of the local public corporations and other people at the prefectural level. These seminars ought to be subject to the regulations stipulated by the national government (elements of statistics—20 hours; detailed exposition of every branch of statistics—30 hours; statistical mathematics—15 hours; calculation methods and computing machines—5 hours; statistical laws and regulations—2 hours; statistical practice—13 hours; economics in general—15 hours) (a total of 100 hours).

For the introduction and diffusion of advanced statistical techniques, seminars of such types as statistical quality control, or operations research are often held under the sponsorship of research corporations or economic organizations.

Conclusion

As we have outlined above, the teaching of statistics in Japan has made good progress after the war, but at the same time it involves flaws and disproportions. To emphasize this observation, we wish to stress some of the important points:

(a) Although the teaching of statistics at school has progressed a great deal, it leaves much to be desired in the field of social education. Whenever large scale surveys such as the population census are conducted, efforts are always made to enlighten the reporters in every way possible. But it will be necessary to work on the system so as to gain more cooperation of the people in statistical surveys, and at the same time to cultivate the right way of looking at, and thinking of, things quantitatively, so that it may serve to increase their general education and contribute toward the improvement of business managements.

(b) The teaching of statistics at schools in Japan lacks coordination and order in its contents. Perhaps this confusion and disunion is partly attributable to the present situation of the statistical world, and may be inevitable in a sense. The fundamental solution will not be, however, brought about by the establishment of a general standard, but only by the correct understanding of what really is statistics. If the real nature of statistics can be made clear, the question of what must be taught will be settled theoretically. A thing like the general standard is a technical problem to be taken up after that.

(c) The facilities, the budget, and the staff for the teaching of statistics are not sufficient. An increase in the budget for the statistics course of the economics faculties of national universities is a long-pending problem, but it is not likely to be realized soon. The teaching of statistics in universities ought to be combined with practical exercises such as statistical surveys. In this respect, a better coordination between universities and statistical institutions must be established.

(d) From the view-point of training professional statisticians, the existing system of the teaching of statistics in universities is not satisfactory. No university has a faculty of statistics or statistics branch for the exclusive study of statistics at present.

(e) Special practical training of statisticians already in service is not adequate. A better arrangement should be worked out between universities and statistical institutions in this respect.

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ON THE TEACHING OF STATISTICS IN ITALY

by

Benedetto Barberi

Central Institute of Statistics, Rome

Statistics and the teaching of statistics have a long tradition in Italy. It was realized long ago that the subject deserved special attention in order to assure a good theoretical basis in persons expected to carry out statistical tasks at different levels. For persons wishing to become professional statisticians, as well as for chiefs of statistical offices of public agencies, a post-doctoral examination for qualification in statistics was established by law. The examination, dealing with methodology and applied statistics can be taken every year in a University. For persons due to carry out technical statistical work, a diploma was required, which was given after a two year post-secondary school course in special statistical schools attached to the Political Sciences or to the Law Faculties in a number of Universities.

As far as statistics teaching in Universities is concerned, many Faculty curricula include statistics courses varying considerably in quality depending primarily on how competent students are in mathematics and what knowledge they will need in their future professional life.

Two general statistics courses are given in Economics and Commerce Faculties. One of these courses, dealing with averages, ratios, variability, interpolation, statistical relations, and elimination methods is required for all students in the first year; the other one, dealing with income and wealth surveys, various aspects of income distribution, the dynamism of economic life, and economic forecasting is required for all students in the second year. In many Universities, both courses are assigned to the same teacher in order to ensure a better continuity in the teaching. The curriculum also includes an elective course on demography which covers definitions, content, population trends, demographic forecasting, population and food, and new prospects.

Statistics is also taught in Political Sciences Faculties. In the first year, all students are supposed to take a general statistics course which includes basic concepts and some principles of statistical methodology, such as synthetic representation of statistical distributions and characteristic parameters. An optional course in economic statistics is offered, covering general concepts and the scope of economic statistics, national accounts, statistics of economic sectors of production, income, capital formation, balance of payments, economic indicators of prices and production, and financial indicators. Another optional course on demography deals with demography partition and methods, population census, vital statistics (natality, nuptiality, migration and mortality in the present century), and laws and inductive valuation of population growth.

In the Faculty of Law curriculum, general statistics and demography are included as optional subjects. Undergraduates interested in such subjects are asked to follow the corresponding courses in another Faculty.

As far as scientific Faculties are concerned, there are basic elements on sanitary statistics in the Medicine Faculty curriculum. In the Mathematical, Physical and Natural Sciences Faculty curriculum, a statistics course is included dealing with enumeration, tabulating process, distribution, variability, experimental results tabulation, and the design of experiments. A calculus of probability course is also included, dealing with probability and induction, principles of the theory of probability calculus, and inductive reasoning. All these courses are optional.

In the Agriculture Faculty, a required course is given on economics and principles of statistics. As far as statistics is concerned, this deals with definition, averages, index numbers, diagrams, and statistical distributions, with particular attention to agriculture field applications.

In the Statistical, Demographic and Actuarial Sciences Faculty of Rome University, the successful completion of a course of four years is required for students to receive a degree in statistics. In the first year the course includes general statistics, which deals with basic subjects. An introductory course in economic statistics is also taken by all students in the first year, covering agricultural, industrial, internal and foreign trade statistics and national accounts. In the second year the economic statistics course includes index numbers of wholesale and retail prices and cost of living, consumption in connection with income and with prices, income distribution and economic forecasting. The other four courses given in the second year are demography, legal statistics, social statistics and health statistics. The last three treat applications of statistical methods to the fields of justice, sociology and health respectively. In the third and fourth year, the curriculum includes statistical methodology, population growth, economic statistics (advanced course), and applied statistics in the physical sciences. In addition to these courses, electives are available on such subjects as marketing and business statistics, and national accounts.

In the senior secondary schools, basic statistics is taught in the Technical Commercial Institute. The teaching includes utility and concepts of statistics, data enumeration, data processing, graphic representation, index numbers, demographic statistics concepts, and census.

It is felt among persons having the responsibility of the national statistical system that while universities in general can be relied upon to provide a certain amount of leadership in the development of statistical theory and education at the higher technical levels, it will still be necessary to relate the technical knowledge gained in

universities to the actual conditions of statistics in our country, and to the particular field in which persons are expected to work in the different stages of their professional lives. That is the reason for the establishment of a number of advanced up-to-date statistical training courses.

The main problem confronted by those organizing and teaching post-doctoral courses is the different scientific training and statistical experience of people taking the courses. This difficulty is generally overcome, but not very easily, by partitioning a course in different classes according to the previous preparation of the students, or, by giving a more descriptive character to the lectures.

In 1957 the Central Institute of Statistics established a special seminar called Istat Seminar, the purposes of which are as follows:

—To improve the scientific and technical formation of the central staff.

—To stimulate the knowledge and the application of up-to-date statistical methods among the statistical staff of the government, of private enterprises, and of various bodies and agencies.

—To promote the development of statistical studies with particular attention to studies related to Institute activities, carried out in Italy or abroad.

Executives and the technical staff of the Institute and of other public and private agencies can take part in Istat Seminar activities, together with other persons really interested in statistics. The Seminar is divided into classes, sections and working groups depending on the different field of scientific or technical interest. All members can participate in every section or class meeting, as well as in the general meetings. Methodological subjects arising from daily work experience, such as description of current surveys and of data processing, are discussed. Each class has an organizer charged with the establishment of different subjects and the regulation of debates following each lecture.

The need for a training course specially designed for the field staff has become essential because the importance of the staff is growing, particularly in connection with economic and social statistics of general interest. That is why the Ministry of Commerce and Industry and the Italian Union of Commerce Chambers long ago agreed with the Central Institute of Statistics that it was necessary to establish a course with the purpose, among others, of promoting better cooperation between central and field staff.

This course now meets once a year for one or two weeks. Applied technical questions and methodology problems are discussed. The main subjects considered so far are prices, economic accounts, sample surveys, and field enumeration. The tendency is to focus every course on one or two particular subjects. The program is distributed in advance so that everybody can get acquainted with the different topics. Beginning last year, in order to obtain a more active cooperation, the course was organized as a seminar.

Two other advanced courses are worth mentioning. The one is organised by the Institute of Calculus of Probability and the Institute of Statistics of the Statistical, Demographic and Actuarial Sciences Faculty of Rome University and sponsored by the Ministry of Education and by the Central Institute of Statistics. The course is intended to train operational and experimental researchers to use statistical methods for the design, actuation and interpretation of their researches, providing them with a new and needed working technique.

The course runs over six weeks. At the beginning, general and basic subjects are discussed. Later on particular applications of those methods are illustrated, with separate presentations for experimental and operational researchers.

The other of the above mentioned courses is organized by the Italian Marketing Association and sponsored by the Central Institute of Statistics. Its aim is to offer a specialization in marketing and in its practical application to the various sectors of economic activity to persons already trained in economic research such as commercial directors, executives of sales and development offices, and advertising experts. Scholarships are offered to Italian and foreign graduates who are seeking their first job in marketing problems. In addition to ordinary lessons, lectures are given on marketing activities in United States and in European Countries, together with practical exercises in sample surveys.

As can be seen from this over-all view of the teaching of statistics in Italy, students are given the opportunity of following statistics courses in several University Faculties. In a number of other Faculties, however, no statistics courses are offered at all, or at best, very few. This is a bad thing not only for students interested in the subject, but for all students, including those who would prefer to avoid such courses. In fact, the increasing use of statistics in a variety of subject matter fields and the demand for people with statistical training calls for statistical specialization for doctors, engineers, scientists as well as for businessmen, managers and economists. That is why a reformation of the whole educational system is being planned. Statistics courses, dealing with theory and its application, are due to be included in scientific Faculties curricula as well as in curricula of Faculties leading to managerial professions and to public administration jobs.

According to the importance of the subject, basic courses will be all required courses, as it is well known that in choosing optional courses students too often avoid the ones considered more difficult or requiring long study.

As far as senior secondary schools are concerned, the establishment of a statistical branch was proposed in the Technical Institute in addition to the Commercial and Geometer branches. The course will run over five years, and will have as its proclaimed aim the training and the professional formation of statistical technicians at the middle level.

ADVENTURES IN STATISTICS VIA EDUCATIONAL TV

By

Frank Meissner

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TV is "a neutral carrier of ideas and ideals that gains its significance from the skill and intelligence of the people using it."

Ralph Steele, Joint Council for Education Television, Washington, D.C.

For several years I have had the privilege of teaching an elementary course in statistics. My students have averaged about 30 years of age. They are highly motivated and they work hard. It is a pleasure and a challenge to have such an audience.

Yet I have felt for years that the broadcasting of our statistical gospel was unduly limited to class room lectures. To come to the school requires quite a physical exertion. Some of the students have to drive over 30 miles to get home after class. How many people could I get into the course if only the subject matter could be brought into their homes?

This question inevitably comes to me whenever I witness how, via TV, some of the Nations' great teachers have been able to reach and influence millions of viewers scattered over thousands of square miles. Scientific authorities and the complicated equipment they use to pursue knowledge have become familiar to students in schools and children as well as adults in homes. The historic event and the artistic creation have been watched in a multiplicity of detail which words could never capture.

Why, then, should we not put an elementary statistics course on TV? I was casting around for an answer to this question when Grant I. Butterbaugh's "Educational And Training Films in Statistics" was published.[1] I was certainly in a receptive mood.

True, Mr. Butterbaugh regrets deeply the fact that good educational and training films in statistics "are about as plentiful up to this time as are successful rockets to the moon." Yet, he ends with a constructive although very modest and general suggestion. This is that the A.S.A. ought to "begin looking into the field of audio-visual education and training through films and filmstrips to the end that educational film producers be induced to work in the area of statistics. We (the ASA) ought to provide teachers in schools, colleges, and industry with material that can be applied along with lectures and problem material for the stimulation of discussion, the enlivening of the subject with a change of pace, and training through various types of audience participation." [2]

I would like to endorse Mr. Butterbaugh's last sentence and use it as a preamble to a specific program to be sponsored by the A.S.A. I suggest that A.S.A. take the initiative to develop and eventually to offer producers of educational films a well-thought out program in statistical education. It should contain carefully worked out examples illustrating application of major statistical concepts in different fields of endeavor. The program should be flexible enough so as to be usable for different types of audiences. Each topic should be developed independently so that it could be presented separately. Yet each should be well integrated with the rest of the subjects to fit into sequence presentations.

Some Tentative Suggestions:

1. A special *Committee on Audio-Visual Aids in Statistics* should be appointed.[3] Members of the Committee should represent the different sections of the A.S.A., and should include some individuals who are engaged in teaching, and who are vitally interested in the subject.

2. The Committee should assemble an index of available materials. Mr. Butterbaugh's list of films is a good beginning. The search for the materials could be aided by the Joint Council of Educational Television in Washington, D.C. This is an advisory body which collates and collects information from all sources to guide American schools in need of assistance. It also provides a channel of communication with overseas educational authorities.

3. Relevant experiences should be critically reviewed and evaluated.

(a) In the USA there are numerous colleges with TV stations (ETV). For instance, W T T W, used by the Chicago City Junior College, provides freshmen and sophomore courses for home study. The students are registered and, in addition to the TV lectures, receive a regular flow of written explanatory materials. They participate in a regular weekly seminar with college instructors. The TV students take standard examinations.

The results of the "TV students" compare more than favorably with the "campus regulars." There seems to be at least three reasons for that: the ETV students are older than their campus counterparts, they are highly motivated to succeed, and they benefit by instruction from the best teachers, who may not be available for all campus lectures.[4]

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[1] Grant I. Butterbaugh, "Educational and Training Films in Statistics", *The American Statistician* (April, 1959).

[2] *Ibid.*, p. 14.

[3] Editor's note: A committee similar to that suggested has been approved by the Board of Directors and has been appointed by the President. See the list of 1960 committees in this issue.

[4] The entire setup is described and the results analyzed in C. G. Erickson & H. C. Chausow, *The Chicago City Junior College Experiment in Offering College Courses for Credit Via Open Circuit Television* (March 1958 and April 1959). The subjects

(b) Foreign experiences [5] would be equally valuable. In this connection we ought to examine the work of the Independent Television Authority (ITA) which was set up in England during 1955. It was to provide commercial TV in contrast to the public service programs, which up to then had been the monopoly of the British Broadcasting Corporation (BBC). The ITA charter requires that some program time be given to cultural activities. The ITA decided to fullfil this requirement by providing a General School Television Service.

(c) Too, the French experiences in the sister discipline of mathematics would no doubt prove quite relevant. The Institute of Applied Social Sciences at the University of Bordeaux has produced a color 16 mm. series of films. The topics include the Exponential Law (in two parts), Pascal's Triangles, and the Binomial Law. The films, with English text, can be obtained from ISHA Services Techniques, 17 rue Richer, Paris 9, France. These movies now constitute an integrated part of mathematical education. They have been described as:

> "not destined merely to give an idea of the questions dealt with in the field of mathematics, or to arouse curiosity about them, or even to serve an intellectual publicity campaign. But rather its task is to teach, to bring to life the mathematical theories and to reason."
>
> "The idea that the (film) can be an essential tool in the teaching of Mathematics finds its roots in an important tradition of thinkers who, be they philosophers or mathematicians, delved into the problem of the nature of mathematical thought." [6]

And what goes for mathematics goes, of course, for statistics as well. Visual aids—be they physical objects, or movies presented to classroom audiences or piped into homes by means of TV—should help to make statistics an adventure in logical reasoning. That is what our French friends correctly argue.

4. A list of suggestions for illustrations should be collected which might eventually serve as basis for copy development. For examples of broad interest topics we would not have to go far afield. They are all around us in sports, education, advertising, politics, medicine and popular science.

Here are a few suggestions, which came to my attention during routine readings in one single solitary evening.

(a) An article like G. R. Lindsey's "Statistical Data Useful for the Operation of a Baseball Team" *Operations Research* (March-April 1959) contains a wealth of rather sophisticated material on averages, measures of central tendency, sampling errors, and frequency distributions.

(b) Fred Streit's, "To Reject or Not to Reject," *Paper Trade Journal* (May 4, 1959) shows how a nonstatistician can safely use analyses prepared by trained statisticians to determine whether production of a certain commodity meets rigid quality specifications. The concept of confidence limits is well illustrated.

(c) Wilbur Schramm and Richard F. Carter, "Effectiveness of a Political Telethon," *Public Opinion Quarterly* (Spring 1959), analyzes former Senator William Knowland's 20 hours and 20 minute television appearance. This gives a few clues about sampling problems that pollsters might encounter.

(d) In "Inhalation in Relation to Type and Amount of Smoking," *Journal of the American Statistical Association* (March 1959), E. C. Hammond contributes some valuable data to the smoking versus cancer controversy.

(e) Fred Streit's, "Pinpointing the Source of Coating Variation," *Paper Trade Journal* (May 11, 1959), shows how analysis of variance can be used for a systematic tracing of causes to troubles in the production of gummed tape.

(f) In my "Pin Pointing Export Markets," 1958 World Review of *Pulp & Paper*, I show how correlation analysis (per capita national income versus paper consumption) helps to evaluate for a paper exporter the import potential of different countries.

And so it goes. There is no end to good illustrations. They merely have to be systematically collected and arranged by topic with appropriate cross references.

5. Professional film makers should be consulted to find out what a series of movies would cost. What type of equipment, teachers, and scripts would be needed?

6. Teachers should be lined up who will be able to make effective presentations. I am sure that a skilled interpreter-teacher could put across statistical concepts to a broad TV audience, in schools as well as in homes. It would not be easy because a thorough understanding and an uncommon knack for popularization would be required from the teacher. But I feel it can be done without compromising professionality. The reason why statistics as a science gets so much negative publicity (as for example, Huff's *How to Lie With Statistics* or Disraeli's motto, "There are liars, damn liars, and statistics") is to great extent due to our poor selling job.

7. By the time the preparation work gets well under way a foundation should be approached for funds. The Ford Foundation participates in establishing ETV's and contracts with the stations for production of appropriate films. The Foundation's library of films at the University of Michigan has now some 2000 programs available for use by ETV stations and other exhibitors.

8. Execute the plans. Make provisions for continuous improvement and up dating of the material.

9. The beginning of the academic year 1963-64 might be a reasonable target date for accomplishing the task. In order to do that it will be necessary to start immediately.

---

taught are English, Mathematics, Political Science, Humanities, Shorthand, Biology, Physical Science, Accounting, Psychology, Social Science, and Slide Rule. Excellent general up-to-date references on ETV are *Educational TV Today . . .*, Joint Council on ETV, 1785 Massachusetts Ave., N.W., Washington 6, D.C. (January 1959), pp. 49 and *Teaching by Television*, Ford Foundation and Fund for the Advancement of Education, 477 Madison Ave., New York 22, N.Y. (May 1959), pp. 87.

[5] For an excellent comparison of educational TV in Britain, France, and the US see C. C. Linz, *Television and Education*, The Australian Quarterly, 34 Elizabeth Street, Sidney (December 1957), pp. 36-45.

[6] *Education in France*, French Cultural Services, 972 Fifth Ave., New York 21, N.Y. (May, 1959).

CARD TABULATION BY ADDING MACHINE

by

C. Morris Horowitz

Brooklyn College

Instructors in general courses in statistics because of lack of time, many times either omit entirely or pass over lightly the problem of preparing a questionnaire and of tabulating results once the returns are in. At best, a problem or two in hand tabulation are given and these indicate only the technique of the other extreme, machine tabulation. The more progressive instructors actually bring to the classroom samples of punched machine cards and, if there is time, the preparation of questionnaires, and editing and coding for machine analysis are illustrated.

The vast majority of our students who finally become statistical clerks or statisticians, on one level or another, will not be properly equipped to tackle the tabulation of a questionnaire or do other simple jobs. They will know how to calculate a partial or multiple correlation, how to do a Chi Square test or how to apply the Null-Hypotheses concepts which they will rarely be called upon to apply. For all practical purposes, they will work in a small statistical office or department, will have no equipment or budget for machine tabulation, and will just have to use their own ingenuity.

The author is in the dual position of being an instructor in statistics and economics, as well as a consulting statistician and has, therefore, the advantage of bringing to the college classroom practical methods that he has employed in his office. As consulting statistician of the Jewish Education Committee of New York, Inc., it has been his responsibility to direct the annual census of the close to 750 Jewish schools in the City of New York and in the three neighboring suburban counties of Nassau, Suffolk, and Westchester. Information is collected from each of these schools on enrollment distributed by sex. The schools, however, are characterized by some ten different attributes and must be tabulated and summarized in different ways. For the purpose of an enrollment analysis it is necessary, therefore, to bear in mind the following categories:

1. School level—three groups (pre-school, elementary, and high school).
2. School status—two categories (a school or a department of a school).
3. Ideological orientation (this refers to the religious orientation of the school)—five categories, (Orthodox, Conservative, Reform, Yiddish, Inter-Denominational).
4. Organizational and administrative status (who sponsors the school)—three categories (congregational, non-congregational, Central Yiddish Organization).
5. Days per week—seven categories (one through seven).
6. Hours per week—categories must be made after examination of the data.
7. Number of teachers (in full, part time, and extra-curricular subdivisions)—categories for each subdivision depend on ranges of number of teachers.
8. Year of organization—about six categories (depending on year ranges).
9. Location of school — schools are located in 98 communties within the five boroughs of New York and the three suburban counties of Nassau, Suffolk, and Westchester. These are identified by the first half of the school code number.
10. Type of school—three categories (there are three general types of school, the All Day School, the Weekday Afternoon School, and the Sunday or One Day a week school).

Each of the three types of school categories was recorded on cards of different colors, Blue, Pink, and Yellow.

The preferred way to make such a tabulation would, of course, be by punch cards and machines. Because of budgetary considerations, however, this possibility had to be ruled out. What had been done in the past was to tabulate by entering the data from the questionnaires on large columnar sheets. It had to be decided in advance the order in which the schools were to be listed. Since the most important analysis was by geographic area, the schools were first tabulated by code number order (as noted above, the first half of the code number indicates the location of the school). When, however, it was necessary to analyze the data by other variables, for example, by ideological orientation, by days per week, or by hours per week, it became necessary to retabulate each of the schools according to the categories estab-

(Continued on page 25)

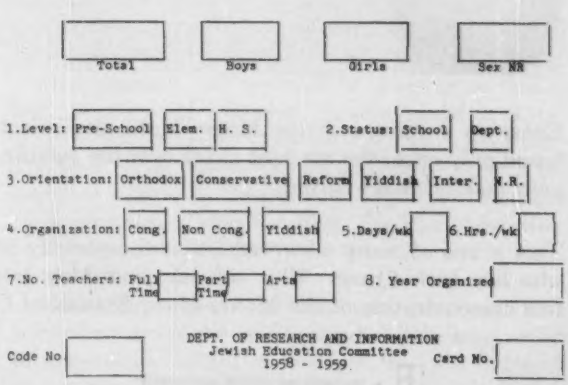
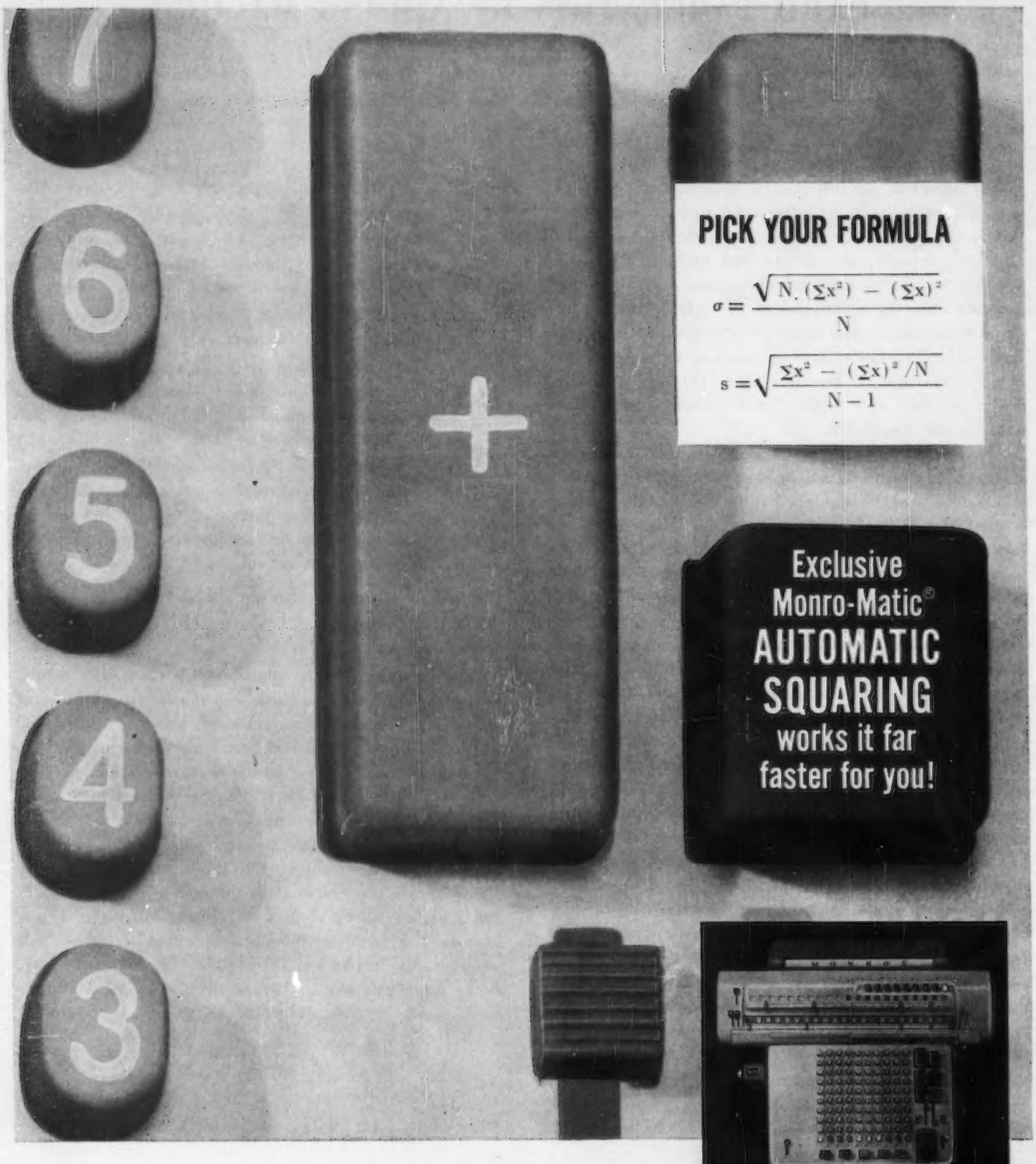


Fig. 1



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QUESTIONS AND ANSWERS

Edited by ERNEST RUBIN
U. S. Department of Commerce and American University

Historical Statistics and the Census [1]

Since 1790 the statistical event of singular importance in each decade of United States history is the census.[2] April 1, 1960 was the date of our eighteenth census of population. Leaving aside the constitutional requirement, why are censuses generally taken? Should we dispense with quinquennial or decennial censuses and resort to more frequent sample surveys or enumerations? What, if any, are the relationships between census and non-census statistics? [3] These questions will serve as the foci of the present discussion.

In the main the evolution of statistical data in the United States has had no definitive pattern. The governmental development of statistical data in various respects has been uneven and sporadic; this I believe was the situation especially prior to 1930, although World War I served as a stimulus, for a brief period, toward national statistical uniformity in the economic domain.

Not only is there a trichotomy among Federal, State and local statistics, but within each administrative sector there exist statistical disuniformities. Income, unemployment and certain economic data have different or varying connotations for various federal agencies, such as Bureau of Labor Statistics, Bureau of the Census, Internal Revenue, the Social Security Administration or the Office of Business Economics. It should be noted, however, that in some instances there are valid substantive reasons that result in differences of statistical measurement. Between and among the States there exist differences, for example, in the statistical reports of crime and education. Regarding towns, cities, and counties, there are also wide variations of classification and reporting of comparable quantitative data. The need for an overall uniform census on a national basis, at least for a certain minimum number of basic items, becomes imperative.[4] It should not be concluded, because examples are selected from U.S. experience, that this country's statistical situation is unique. The Office of Statistical Standards in the Bureau of the Budget has been engaged in coordinating government statistics since the 1930's.

It may be worthwhile to pause and reflect upon the desideratum of a uniform statistical system and network for our three governmental branches compared to the numerical morass that has grown up here in an Alice-in-blunderland fashion. The usual opposition to suggestions or hints of this sort is that we approach regimentation via the route of a centralized statistical system. This argument is akin to that of the tail moving the lion's head.

The growth of many government statistics in this country has been a function or by-product of administrative process. In several instances, specific statistics were required by legislative provisions. Statistical uniformity was not assured, however, because of changes within the agency responsible for the collection, classification and publication of the data; and in some instances these responsibilities were transferred to another agency or divided among several agencies. One example will suffice to illustrate the foregoing point.

> "Immigration statistics were compiled by the Department of State from 1820 to 1874 and by the Bureau of Statistics of the Treasury Department from 1867 to 1895. Since 1892 there has been a separate Office or Bureau of Immigration, now a part of the Immigration and Naturalization Service. . . ." [5]

By way of amplification it should be mentioned that from 1903 to 1913 the Bureau of Immigration was part of the Department of Commerce and Labor; from 1913-1940 this Bureau was in the Department of Labor, and since 1940 the Immigration and Naturalization Service is part of the Justice Department. An examination of the immigration statistics covering the one hundred and forty year period of their collection since 1820 reveals many changes and modifications; these results are traceable to a variety of reasons, such as the agency shifting, new legislative provisions and the desire to improve or make more useful certain types of data.[6]

Federal statistical development also reflected the personalities of individuals in government, as well as efforts of members of the American Statistical Society, who gave serious thought and effort to this subject. Confining our remarks to some of the early historical precursors in this field, mention may be made of Archibald Russell who in 1839 made an elaborate plea for the extension of topics to be covered in the national census (all these topics were eventually included).[7] Russell subsequently assisted Lemuel Shattuck in improving census schedules and instructions used in the census of 1850.[8] Shattuck was one of the founders of the American Statistical Association. Edward Jarvis, J. D. B. deBow, Francis Walker and Carroll Wright are a few of the men in the nineteenth century who made deep impressions in the field of governmental statistics, particularly at the national level.[9]

Brief reference may be made to sampling operations and the decennial censuses. Strictly speaking, I believe modern sampling procedures and techniques were first used by the Census Bureau in connection with the census of 1940, to be subsequently refined and expanded in the censuses of 1950 and 1960. The idea of sampling census data, though not necessarily on a scientific basis, is considerably older.

DeBow cites an exact age distribution based on 30,131 selected returns of the 1850 census.[10] I have been unable to discover the method of selection that was employed in obtaining this sample. In another instance, DeBow

comments in a footnote on two classifications that were not tabulated from the census schedules, namely the occupations and nativities of slaveholders. He then states "An experiment in one southern town, gave accountants, barbers, bakers, blacksmiths, . . . tinners, etc., 32 (occupations) out of a total of 250 holders, and 115 natives of free States (at home and abroad, 49 being foreign,) out of the same total of 250." [11]

An examination was made of 130,000 enumerations of the twelfth census of 1900 to compare age based on date of birth and the recorded age.[12] According to the report of this study

> ". . . A careful inspection of ten bound volumes of the original census schedules of 1900 was made, to learn how large was the number of cases in which the reported year of age was inconsistent with the reported date of birth. . . . It was found that of 130,000 enumerations taken by census agents in five rural counties (one each in Kansas, Mississippi, New Hampshire, Oregon, and Pennsylvania, and five large cities (Boston, Chicago, New Orleans, New York and San Francisco), there were 12,526 cases of disagreement between date of birth and age recorded. . . ." [13]

An interesting study could be made of sampling experiments by census officials prior to 1940.

By utilizing sampling there was obtained simultaneously with the total population enumeration in 1960 a 25 percent sample for most items of information, such as income, occupation, education, migration and place of birth. Complete enumeration was made only of age, sex, race and marital status. Sampling techniques and practices have advanced very considerably; and in some measure the experience and personnel of the Bureau of the Census have contributed to these gains. Partly as a result of success achieved with sampling in the censuses, it has been suggested that sampling surveys be conducted, in lieu of complete enumerations, where possible.

To a considerable extent the Federal Government engages in a variety of sample survey operations. Among the agencies conducting surveys are the Bureau of the Census, Bureau of Labor Statistics, various agencies in the Department of Agriculture, and the U.S. Public Health Service. The subject matter of these sample surveys covers such diverse topics as labor force, employment, wage data, consumer and wholesale prices, internal migration, incidence of venereal diseases, harvests, and manufacturing. In effect, many of these sample surveys serve as or supplement census information, particularly in intercensal years.

Although it is widely recognized that censuses are subject to errors (and to some extent sampling is helpful in determining such errors) it is nevertheless necessary and important to obtain complete censuses at periodic intervals. It must be kept in mind that samples can be subject to greater variability than complete enumerations. Even aside from this possibility, it seems necessary to establish, at least for certain population data, the most complete counts. Reasonably accurate population counts in sufficient detail for small areas can best be obtained by total enumeration. On a more technical level one may add that estimates of items of low frequency in the total population would be subject to considerable error in a sample. It is clear, however, that modern sampling techniques have made possible an unparalleled expansion of quantitative knowledge.

A number of special problems arise in comparing or using census data, especially if they are widely separated in time, or in combining census data with non-censal information, primarily of the administrative statistical variety.[14] In this connection I think it useful to quote part of an outline used in delivering a lecture on the use of statistical materials for research in modern history:

"Problems in Use (of older records)

A. Bulkiness of schedules: (1) Application of sampling

B. Setting of questions: (1) Meaning within the culture; (2) Biases, wording; (3) Establishment of the concept for measurement purposes

C. Adequacy of the Survey: (1) Problems of completeness; (2) Biases in selection of respondents; (3) Clarity of the concepts

D. Availability of summaries: (1) Dangers of careless transcription; (2) Problems of collating from series of individual reports;

(a) Changes in area coverage, (b) changes in time reference, (c) changes in definitions, (d) changes in controlling factors."[15]

Census data are of basic importance in their relation to the current total statistical picture; and they also occupy a central position in the body of our historical statistics. It is gratifying that while the Bureau of the Census continually seeks to improve its methods of acquiring contemporary information it is also concerned with the general historical statistics of this country.

NOTES

1. For related discussions in this section see *The American Statistician* of October 1955 and February 1956.
2. Article I, Section 2, of the U.S. Constitution, (adopted in 1789), provides: ". . . The actual enumeration shall be made within three years after the first meeting of the Congress of the United States, and within every subsequent term of ten years, in such a manner as they shall by law direct."
3. The reader is reminded that this spring the second edition of *Historical Statistics of the United States*, a publication of the U.S. Bureau of the Census, will appear. This work, part of which I have examined in proof, represents a very considerable expansion of the first edition which appeared in 1949. It is, without exception, the most valuable and comprehensive single volume on historical statistics produced in the United States.
4. The fourth statistical sector in our economy is that of private businesses and institutions, and will not be discussed here. Large and small businesses, as well as industrial and financial organizations, have developed statistical systems of varying degrees of complexity. This situation is also true of private educational institutions and hospitals. In the aggregate it seems to me that billions of dollars are wasted annually because of the lack of statistical uniformity and duplication, of time and effort, in the four statistical sectors.

5. *Historical Statistics of the United States, 1789-1945,* (U.S.G.P.O., 1949), p. 19.
6. E. P. Hutchinson, "Notes on Immigration Statistics of the United States," *J. Amer. Stat. Assn.*, Dec. 1958, Vol. 53, No. 284, pp. 963-1025.
7. Archibald Russell, *Principles of Statistical Inquiry;* as illustrated in proposals for Uniting an Examination into the Resources of the United States with the Census to be Taken in 1840, (D. Appelton, New York, 1839), pp. 263.
8. J. D. B. DeBow, *Statistical View of the United States,* (Nicholson, Washington, 1854), p. 13.
9. See generally in this connection, the interesting article "*Statistical Societies* in the United States in the Nineteenth Century," by Paul J. Fitzpatrick, *The American Statistician,* Vol. No. 11, No. 5, December 1957, pp. 13-21.
10. DeBow, ibid, p. 104 Table CVII, Specific Ages of the People of the U.S., ". . . ascertained exactly for 30, 131."
11. Ibid., footnote on p. 95
12. William B. Bailey and J. H. Parmelee, "The Age Returns of the Twelfth Census," *J. Am. Stat. Assoc.*, Vol. XXXII, 1910-1911, pp. 110-213.
13. Ibid., p. 111.
14. Some discussion of these points, limited, however to the domain of demography, may be found in Simon Kuznets and Ernest Rubin, *Immigration and the Foreign Born,* (National Bureau of Economic Research, Inc., 1954), pp. 52-65; see also, Ernest Rubin, "Some Reconstruction and Estimation Problems in Historical Statistics" in American Statistical Association, "Proceedings of the Business and Economic Statistics Section" (Washington, 1958), pp. 12-16.
15. Morris B. Ullman, "Lecture on Statistical Materials" delivered October 28, 1948 in the graduate history course *Materials for Research in Modern History,* given at American University by Professor Ernest Posner.

CARD TABULATION . . . —CONTINUED FROM PAGE TWENTY-ONE

lished for the new variables. Not only was this method a great waste of time, but it lent itself to many errors because of the frequent retabulation.

Accordingly, we prepared by mimeograph machine 5x8 index cards, a sample of which is reproduced in Fig. 1. The data from the questionnaires were then tabulated on these cards rather than on analysis paper. Once this was done, the cards were added by the machine for enrollment totals. The adding machine tape was checked for accuracy and the results then became control totals against which any other tabulations of these cards were checked.

The problem was now simple. When a tabulation by a new variable was desired, the cards were arranged accordingly and summing by adding machine was a simple procedure. This method saves a great deal of time, eliminates the possibility of introducing careless mistakes, and is so pliable that a new analysis is no problem at all.

FEDERAL STATISTICAL ACTIVITIES—CONTINUED FROM PAGE 12

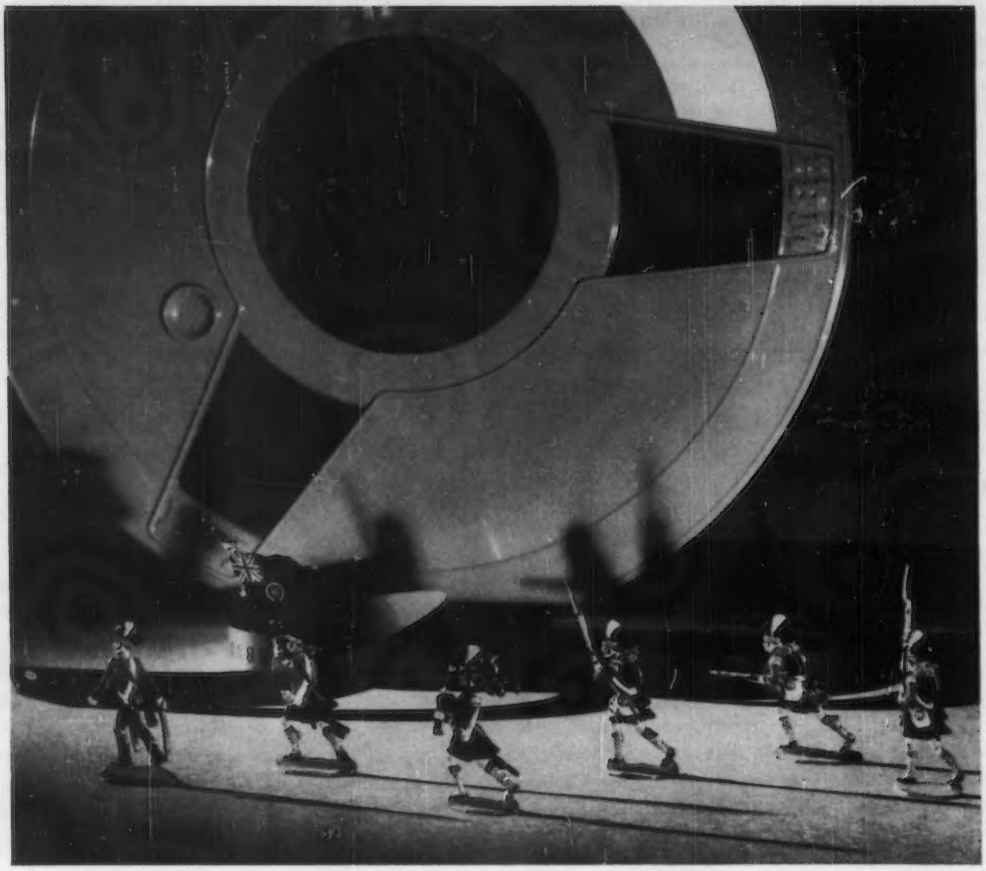
U. S. Business Tax Returns, 1957-58

This report, in the *Statistics of Income* series, marks the beginning of annual tabulations by the Internal Revenue Service for unincorporated businesses engaged in all types of business activity. Not only are receipts and profit data for sole proprietorships and partnerships assembled in one volume, but also, for convenience, similar corporate statistics are summarized from the more detailed tables to be issued in the complete report, *Statistics of Income, 1957-58, Corporation Income Tax Returns.*

Represented are about 10,600,000 business organizations with accounting periods ended July 1957 through June 1958. Sole proprietorships number 8,738,000 (of which 3,343,000 are farms), partnerships 971,000, and corporation returns 940,000. Three important items are emphasized in this report: Number, business receipts, and net profit or net income. Also, for partnerships and corporations, gross profit is tabulated. The major classifications are industrial groups, size of business receipts or total assets, and size of net profit or net income.

The Internal Revenue Service plans to issue annually a *U. S. Business Tax Returns* report. The 1957-58 volume (27 pages, 35 cents) may be purchased from the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

Helen F. Demond, Chief
Income, Finance and Wealth Branch
Internal Revenue Service



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NEWS ABOUT MEMBERS

J. Stanley Ahmann will be a visiting faculty member at Washington State University for the summer session of 1960. He will teach courses in statistical methodology and psychometrics.

Jervis Braunstein has been transferred from the Population Division to the Demographic Surveys Division, Bureau of the Census, where he will serve as Chief of the CPS and Related Surveys Branch.

Daniel H. Brill, who has been Chief of the Capital Markets Section, Division of Research and Statistics, Board of Governors of the Federal Reserve System, has been appointed Associate Adviser in the Division of Research and Statistics.

Catherine G. Capt has been transferred from the Statistical Research Division, to the Demographic Surveys Division, Bureau of the Census, as Chief of the Health Statistics Branch.

Arnold Chase, Special Assistant to the Commissioner, Bureau of Labor Statistics, has been appointed Chief of the Division of Prices and Cost of Living.

Norman Cooperstein has joined the Control Data Corporation in Minneapolis as a Supervisor of the Commercial Systems and Applications Programming Section for the CDC 1604 and CDC 160 Computers.

Lewis N. Dembitz, who has been Research Associate, has been named Associate Adviser, Division of Research and Statistics, Board of Governors of the Federal Reserve System.

William Dorfman has joined the Corporation for Economic and Industrial Research in Arlington, Va. as a Senior Operations Analyst. He was formerly Assistant Professor at Sacramento State College in Sacramento, California.

Edgar H. Elam, Jr. of the Census Bureau has been assigned as Public Administration Adviser-Census, USOM to the Philippines. He was formerly stationed at the American Embassy, Tegucigalpa, Honduras.

Howard C. Grieves, Census Bureau, was given the Department of Commerce Exceptional Service Award "for imaginative leadership in achieving major breakthroughs in improving the timeliness and quality of our major economic censuses and at the same time sharply reducing their costs".

C. Horace Hamilton is spending this academic year at the University of Wisconsin as Visiting Professor of Rural Sociology. He will return to North Carolina State College in July 1960.

Samuel Perkins Hayes, Jr. will assume the post of Director of the Department of Social Sciences of UNESCO at the end of June 1960. Dr. Hayes is now Professor of Economics at the University of Michigan and is the Director and Trustee of the Foundation for Research on Human Behaviour.

Walter A. Hendricks, Chief of the Research and Development Staff, Agricultural Estimates Division, Agricultural Marketing Service, has retired from government service and has accepted a position in the Statistics Research Division, Research Triangle Institute, Durham, North Carolina.

Irving Hoch's new position is Assistant Professor, Department of Agricultural Economics, and Staff Member, Giannini Foundation, University of California, Berkeley, California. His major interest is in quantitative methods.

Shriniwas Keshavarao Katti completed requirements for the Ph.D. Degree in statistics at the Iowa State University in January 1960. He has joined the staff of the new Department of Statistics at the Florida State University, Tallahassee, Florida as Assistant Professor of Statistics.

Thomas J. Lanahan, Jr. is on leave from the Agricultural Economics Division of the Agricultural Marketing Service, USDA, to do some further graduate study at Michigan State University.

John W. Lehman is serving as Clerk and Acting Executive Director of the Joint Economic Committee, U. S. Congress, succeeding Roderick H. Riley who resigned as Executive Director in January.

Herbert L. Lombard, who was, until his recent retirement, Director of the Division of Cancer and Chronic Diseases, Massachusetts Department of Public Health, was officially cited by the Commonwealth for his many outstanding contributions in the fight against cancer.

Nicholas E. Manos, formerly with the Office of Space Sciences of the National Aeronautics and Space Administration, has joined the Special Studies staff of the National Health Survey as Supervisory Analytical Statistician.

Charles W. Morton has left the Industrial Relations Center of the University of Minnesota and is now with the Department of Research and Education, International Woodworkers of America, Portland, Oregon.

Jerrold H. Moyer, Supervisor, Statistical Services, Champion Paper & Fibre Company, Texas Division, Pasadena, Texas, presented a technical paper entitled "A Statistically Based Sampling Procedure for Estimating Conformance to Basis Weight Specifications" at the 45th Annual National Meeting of the Technical Association of the Pulp and Paper Industry (TAPPI) at the February meeting in New York City.

R. D. Narain, Regional Statistician for Asia and the Far East, Food and Agriculture Organization of the United Nations, has been transferred to FAO Headquarters, Rome, as Chief of Production Branch.

Kenneth C. Pearson, formerly Toll Lieutenant, Mystic River Bridge Authority, is now a Statistical Analyst with the Massachusetts Port Authority, Charlestown, Massachusetts.

Lloyd A. Prochnow is returning to the United States after serving for two years with the International Cooperation Administration's Mission to Pakistan. Mr. Prochnow, who is with the Bureau of Census, was loaned to ICA to work with the Mutual Security Program.

Maynard S. Renner, Staff Assistant to Research Director, W. R. Grace & Co., Dewey & Almy Chemical Division, Cambridge, Massachusetts, presented a technical paper entitled "Some Underlying Considerations in Estimating Basis Weight Variations" at the 45th Annual National Meeting of the Technical Association of the Pulp and Paper Industry (TAPPI) held in February in New York City. Mr. Renner also served as Chairman of Statistics Session I at the meeting.

Winfield Riefler retired on December 31st from his position as Assistant to the Chairman, Board of Governors of the Federal Reserve System.

Earl A. Thomas, formerly Technical Adviser Reliability, Burroughs Research Center, Paoli, is now with the Institute for Defense Analysis, Washington, D. C.

John W. Tukey, Professor of Mathematics at Princeton University and Assistant Director of Research, Communication Principles, Bell Telephone Laboratories, has been appointed to membership on President Eisenhower's Science Advisory Committee for the four-year term beginning January 1, 1960.

Terence Young is Adviser to the Department of Statistics and to the Development Board, Government of Jordan, working for the Ford Foundation. His address is c/o Department of Statistics, P.O.B. 2015, Amman, Jordan.

Future Annual Meetings of ASA are as follows:

YEAR	*PLACE*	*HEADQUARTERS*	*DATES*
1960	PALO ALTO, CALIF.	STANFORD UNIVERSITY	AUGUST 23-26
1961	NEW YORK CITY	ROOSEVELT HOTEL	DECEMBER 27-30
1962	MINNEAPOLIS	LEAMINGTON HOTEL	EARLY SEPTEMBER
1963	CLEVELAND	CASE INST. OF TECH. AND WESTERN RESERVE UNIV.	EARLY SEPTEMBER

ROBERT HAMILTON COATS, 1874-1960

Dr. Robert Hamilton Coats, L.L.D., F.R.S.C., who died in Ottawa on February 7 at the ripe age of 85, was, as a statistician with an international reputation and a learned economist, one of Canada's most distinguished civil servants. He belonged to an ancient Scottish family, the Coats of Dykehead in Lanarkshire, from which sprang the famous Coats family of Paisley, whose thread mills have produced a score of millionaires, and they recognized Robert Coats as the head of their clan.

His father, Charles Coats, had emigrated to Canada a century ago and prospered as a merchant and private banker in the country town of Clinton in Western Ontario, where Robert Coats was born in 1874. After receiving an excellent education at Clinton High School and the University of Toronto, from which he graduated with high honors, he chose journalism as his first profession and worked for 6 years on the Toronto Globe, until in 1902, when his friend, the late Mackenzie King, who was also working for the Globe, migrated to Ottawa to organise as Deputy-Minister the newly-formed Department of Labor, he persuaded Coats to join its staff as editor of a Labor Gazette, which was established. If a dispute about policy had not lost him the favor of Mackenzie King, the latter, when he entered politics in 1908 and became Minister of Labor, would almost certainly have promoted Coats to be his Deputy-Minister.

However he made himself an expert upon statistics relating to labor and industry and wrote a book on "The Labor Movement in Canada." At this period Canada had a haphazard statistical service under the aegis of the Department of Agriculture and when it began to prove inadequate, the Conservative Ministry of Sir Robert Borden in 1916 decided to improve it by the creation of a separate Bureau of Statistics and, although Coats was known to be an advanced liberal in his political and economic views, on the strength of his reputation as a competent statistican he was chosen as the Bureau's first head with the title of Dominion Statistician and was also appointed Controller of the Census.

In the organisation of his Bureau, Coats recruited for its staff a group of able young graduates of universities and he soon made it a very efficient and valuable agency of the Federal Government of Canada. Moreover, the Bureau's coordination of economic and financial data from all of Canada's scattered provinces, gave a great stimulus to the economic consolidation of the Dominion and offered useful guidance to not only the Federal and provincial authorities but also to the industrial and commercial communities in formulating their policies. Coats also initiated and edited personally for many years the Canada Year Book, which was an exhaustive and accurate compendium of information about the national economy of Canada and came to be regarded by statisticians of other countries as a model publication of its type.

Before he was 50, Coats was acknowledged to be the best informed authority in Ottawa upon the workings of Canada's economy and he was the trusted adviser of Canadian Governments of different political stripes on economic problems and in this role attended several conferences of Prime Ministers of the British Commonwealth. He also represented his country at international conferences on statistics and other matters and served on a number of important Royal Commissions which investigated domestic problems of Canada. After his reputation as a first-rate statistician and economist had spread to other countries, the League of Nations invited him to move to Geneva and become its chief statistician and more than one large corporation offered him employment at a much higher salary than he was earning. But he rejected these alluring offers because he had dedicated himself to the service of his native land and he did not want to leave his agreeable circle of friends and pleasant home in Ottawa.

He left his Bureau in a high state of efficiency as his permanent monument when under the operation of the age limit he retired on pension in 1942, but he did not eat the bread of idleness. Finding that the staff of the Department of Political Economy in his old university had been depleted by enlistments in the armed forces, he offered his services to it and with the title of Visiting Professor, lectured on economic subjects at Toronto from 1942 to 1946. After returning to Ottawa in 1946, he did useful work as statistical adviser to the Food and Agricultural Organization of the U.N.

Coats's international reputation as a statistician involved him in activities outside his own country and brought him high offices in learned societies. He got leaves of absence to assist both Israel and Brazil in organising efficient statistical services and he was a member of the League of Nation's Commission on Statistics and acted as Chairman of a British Commonwealth conference on statistics. He was elected President of the Political Science Association of Canada (1935-36), President of the American Statistical Association (1938), Chairman of the Social Science Research Council (1945-46), and he served as Treasurer of the Inter-American Statistical Institute from 1940 to 1946. He was a Fellow of the ASA.

Coats was an excellent writer with a crisp lucid style and contributed frequent articles to economic reviews but his friends regretted that he did not leave a greater permanent legacy of his economic and historical lore than the three books which he published—"The Labor Movement in Canada," "The Life of Sir James Douglas" (the first Governor of British Columbia)," and "The American-born in Canada".

No Canadian civil servant of his time could match his record of selfless public service. But Bob Coats, as he was always called, was no stiff-necked official or social recluse. He was a man of great personal charm, who, if he eschewed formal social functions, took great delight in the society of congenial friends. No man in Ottawa was better company, as he was a fine talker with a wide

range of interests, a keen sense of humor and a great fund of amusing stories about the pioneers of his native county of Huron. So he was deservedly popular with all classes in Ottawa, where his death is widely mourned. He was an expert horticulturist, whose favorite recreation, besides fishing, was found in a lovely garden, which he had created in Rockcliffe, a surburb of Ottawa, of which he was one of the first residents. He held honorary degrees from Toronto, McGill and Dalhousie Universities. He was twice married, first to Marie Hollbeister, a Frenchwoman, and after her death, to Maida Skelly of Ottawa, who survives him. He had no children.

John A. Stevenson
Ottawa, Canada

E. DANA DURAND

At its meeting on February 26 the ASA Advisory Committee on Statistical Policy to the Bureau of the Budget approved the following memorial statement for publication in *The American Statistician*.

"It was with a deep feeling of loss that we, as members of the Advisory Committee of the American Statistical Association on Statistical Policy to the Bureau of the Budget, learned of the death of E. Dana Durand on January 6, 1960. He had given freely of his time both in connection with the establishment of the Advisory Committee and during the years since it began its work. Modest as always, he frequently raised the question in his later years as to whether he should continue to serve, but the Committee was unanimous in urging him to participate whenever his health permitted.

A long and distinguished career in the many phases of the Federal Statistical System had led him to feel the need for a strong central statistical office which could provide the leadership and coordination needed by the operating statistical agencies of the Federal Government. It was, therefore, natural that he would be active in 1933 in the creation of the Central Statistical Board which was the predecessor of the Office of Statistical Standards in the Bureau of the Budget, and to which our Committee is an advisory body. He served from its inception on that Board and later on various committees of the Office of Statistical Standards. He always grasped the main sweep of affairs and yet was also willing to grub away at details when that was necessary.

Many of us had him as a friend and colleague from the beginning of our own careers. His advice in both his official and unofficial capacities was often sought and understandingly given. His surprisingly vast knowledge and experience will be sorely missed. To his sons, his daughter, his brothers and his sister, the members of the Advisory Committee respectfully offer sympathy and this brief acknowledgment of at least some of his many contributions.

Advisory Committee on Statistical Policy to the Bureau of the Budget

Ralph J. Watkins, Chairman
William J. Carson, Secretary
Gertrude M. Cox
Martin R. Gainsbrugh
Walter E. Hoadley, Jr.
Howard L. Jones
William R. Leonard
Rensis Likert
Isador Lubin
Frederick F. Stephan
Willard L. Thorp
Samuel S. Wilks

Oskar Anderson died on February 12 at the age of 72. He had been Emeritus Professor of Statistics at the University of Munich since 1956. Born in Minsk, Russia, Professor Anderson was educated at the University of Kazan and the University of St. Petersburg, and earned his doctorate at the University of Kiel (1935). He had held university appointments at the University of Kiev, the University of Varna, Bulgaria, and was appointed Professor of Statistics at the University of Kiel (1942), and at the University of Munich in 1947. Professor Anderson was elected to membership in the International Statistical Institute in 1937. He was an Honorary Fellow of the Royal Statistical Society and of the German Statistical Society, and a Fellow of the Econometric Society, the American Statistical Association, the American Association for the Advancement of Science, and the Institute of Mathematical Statistics. Professor Anderson was an Editor of *Mitteilungsblatt für Mathematische Statistik* from 1949 until 1958, when he became a founding editor of the successor journal *Metrika*. He was the author of many publications in mathematical statistics ranging through correlation and times series, probability, index numbers, and nonparametric tests. His influence on statistical teaching and research in Germany was very great.

Dr. Palmer O. Johnson, 68, Professor of Education and Chairman of the Department of Statistics at the University of Minnesota, died on January 24 in Minneapolis. A native of Eagle Grove, Iowa, Dr. Johnson earned a Bachelor of Arts degree from the University of Wisconsin and a Bachelor of Science, Master's and Ph.D. degrees from Minnesota. He also did research at the University of London. A Minnesota faculty member since 1928, he was a leader more than ten years in pressing for a department of statistics. When it was formed in 1958, he became its chairman. He was author and co-author of several books and statistical editor of the *Journal of Experimental Education*. He served on the science and mathematics advisory committee of the State Board of Education. Dr. Johnson, who would have retired in June, was a consultant to several Federal government committees, and belonged to several educational and statistical societies. He was a member of the Council of the American Statistical Association, having recently been elected as Representative of District No. 8. He was a Fellow of the Association.

CHAPTER NOTES

Buffalo-Niagara

Mr. Wade P. Sewell, Research Economist at the Cornell Aeronautical Laboratory of Buffalo, N.Y., spoke on "Simultaneous Stochastic Equations" at the January 11, 1960 meeting.

Much current research in economic statistics is centered on the problem of formulating models which may be termed "probabilistic" equation prediction and control systems in contradistinction to the earlier deterministic models. During the past few years much of the work of the Cowles Commission has been in this area, especially in expanding statistical theory to accommodate the requirements of such probabilistic models.

Mr. Sewell pointed out that there are many difficulties in using systems of equations in determining those variables that are significant. One problem is the possibility of interdependence of the independent variables. The other problem is the possible interdependence of the dependent variables. These problems interfere with the simple solution of the equations and make the estimation of the parameters of enormous difficulty. The problem of the identified system of equations was mentioned briefly to indicate that satistical methods can be used to obtain the reduced forms from which the parameters can be determined. The problem of the statistical approach in the case of the overidentified system was explored, including the difficulty of using the maximum-likelihood method for estimating the parameters.

The February 1st meeting was a joint dinner meeting with the Buffalo Section, American Society for Quality Control. Dr. George E. Box, Head of the Department of Statistics, University of Wisconsin, spoke on "Response Surface Methodology."

Dr. Box reviewed some of the historical developments leading to the explicit formulation of the response surface to characterize findings from multi-factor experiments. He described some experimental situations in which he felt a description of the response surface was desirable but emphasized that unthinking application of these methods could be extremely misleading to the experimenter. The aims of the experiment should be the guide to experimental design rather than the availability of a highly developed methodology.

Dr. Box also described some of the current research being carried out by him and his group at the University of Wisconsin.

Central New Jersey

A meeting was held on February 9th at Princeton University on the subject "Election Prediction on UNIVAC." Mr. Stephen E. Wright, Applied Data Research, Inc., was the speaker. Mr. Wright discussed the problems of gathering data, checking its validity, and programming for an electronic computer, as well as the usefulness of the electronic computer in past elections.

At the March 15th meeting Professor Anders Hald, Professor of Statistics at the University of Copenhagen, spoke on "Acceptance Sampling for Attributes Based on Prior Distributions and Costs."

Chicago

The Chicago Chapter of the Association is having another active year, with five dinner meetings and ten luncheon meetings. Attendance has been generally good, with some sessions so crowded that there were not sufficient seats.

"What Management Expects From the Statistician" was the title of the talk given at the January 19th luncheon meeting by Mr. H. Bowen Stair, Operating Vice President of the Illinois Bell Telephone Company. He was one of the founders of the Chicago Chapter and was an active ASA member during the thirties. He served as Secretary, as Treasurer, and was a Director for three years. In 1939 he was elected Chapter President.

Highlights of Mr. Stair's talk are as follows:

Management wants the truth. Leaders of business firms may not always like the truth, but they always want to know it.

Statisticians should not become so immersed in techniques that objectives are lost sight of. Methodology is only the means and not the end.

Statisticians must exercise their skills with judgment. A broad understanding of the business is required so that management problems can be anticipated and programs formulated.

Statisticians must be profit-conscious. Analyses and studies must be tested by their contribution to company earnings.

Management expects the statistician to be practical, resourceful, and imaginative. He must practice his art with initiative and tact.

Above all, statisticians must be able to effectively communicate knowledge and judgment to management. Presentations must be brief, timely, and to the point.

Well trained statisticians are neeeded now more than ever before. Sampling, for example, has become a trusted business procedure. New techniques and modern data-processing systems have recently given statisticians more powerful tools. This is most timely, since management needs the facts sooner and in more detail and with more preciseness as business becomes ever more complex.

The dinner meeting of January 28th heard a panel of three outstanding economists discuss the Federal Reserve Board's policy of tight money and its effect on state and local government spending, small business, financial institutions, housing, and the consumer. The panelists were George W. Mitchell, Vice President, Federal Reserve Bank of Chicago, Donald C. Miller, Vice President, Continental-Illinois National Bank and Trust Company, and Ernest A. Dauer, Director of Consumer Credit Studies and Economist, Household Finance Corporation.

The speaker at the luncheon meeting of February 16th was Bryan O. Marshall, Jr., Manager of Management Analysis, Radio Corporation of America. Mr. Marshall's subject was "Forecasting—Its Role in Business Planning." He stressed the importance of the "system concept" in forecasting the sale of individual products. He argued that although statistical analysis forms the basis of a good forecasting system, the statistical forecast must be modified by judgment and non-numerical elements. He stated that, in his experience, numerical forecasts relying upon past sales performance of the products yielded better results than statistical techniques utilizing outside indicators. He contended that statistical methods used should give estimates of expected forecast error and should suggest when changes in forecast and plan are needed.

Dr. Conrad Taeuber, Assistant Director of the Bureau of the Census, discussed the 1960 Population and Housing Census at the dinner meeting held on February 25th. He described procedures for taking the census, its content, plans for speeding up publication of results, data for small areas, possibility of special tabulations, and post-enumeration surveys.

A joint luncheon meeting with the Chicago Chapter of the American Marketing Association was held on March 3rd. Robert J. Eggert, Marketing Research Manager, the Ford Motor Company, spoke on "Advertising Research—Good or Bad?". Speaking of the area of automobiles and of consumer durables generally, he stated that the 1960's may anticipate a break-through in measuring the sales results of advertising expenditures, an area in which the manufacturer, the agencies, and advertising media are conducting extensive research. Three key questions are: (1) How to arrive at an optimum expenditure on advertising and sales promotion, (2) Optimum media mix, (3) Which messages are most effective in advertising. Speaking of conscious motivation vs. unconscious motivation, he made the point that, for consumer durables at least, conscious convictions appear to be a more important key to sales. However, he pointed out that the consumer is not always willing to tell these conscious convictions to everybody.

At the March 15th luncheon meeting Henry O. Gleiss, Executive Vice President of Gould, Gleiss & Benn, Inc., Marketing Consultants, spoke on "What's Happened to Common Sense in Marketing Research?" Mr. Gleiss discussed recent trends in the field of marketing research and pointed out where some practitioners have "gone wrong."

No dinner meeting was held in March because of the Mid-West Conference cosponsored by the Chicago Chapter and the Chicago Association of Commerce and Industry. Coming luncheon meetings are scheduled as follows:

April 20th, 12 noon, at Marshall, Field & Co.
I. "Blackie" Davidman, President, Chartmasters, Inc.,
"Chart Chicanery"

May 5th, 12 noon, at Marshall Field & Co. (Joint meeting with AMA)
Henry Whiteside—
"Marketing Research; Agency or Advertiser Responsibility?"

Detroit

"Will Business Turn Down in 1960?" was the subject of a talk by V. Lewis Bassie, Director of the Bureau of Economics and Business Research, University of Illinois, at the February 25th dinner meeting of the Chapter. Professor Bassie gave the reasons for his belief that the first half of 1960 will be higher than the second half, and discussed the implications with respect to business in 1961. Dr. Harold Barnett, Chairman of the Department of Economics, Wayne State University, was guest chairman.

Hawaii

The speaker at the December meeting was Mr. Paul T. Tajima, Real Property Valuation Engineer, Office of Territorial Tax Commission. Mr. Tajima's subject was "Research Projects in Real Property Assessment." The following new officers were elected and seated:

President—PAUL J. TAJIMA, Office of Territorial Tax Commission
1st Vice President—KEITH WALLACE, Board of Water Supply
2nd Vice President—GORDON FRAZIER, Bank of Hawaii
Secretary-Treasurer — OTTO ORENSTEIN, Hawaiian Telephone Co.

The January meeting heard Mr. Alvin Hanson of Castle and Cooke Terminals speak on "The Problems of Containerization." In February Mr. George McPherson discussed "Application of Statistical Quality Control Methods."

Chapter meetings are now scheduled for the third Tuesday of each month.

Milwaukee

Sixty members and guests attended the general meeting of the Milwaukee Chapter on Wednesday, February 24th, to hear Mr. Richard C. Roth, Senior Project Engineer at the Milwaukee A.C. Spark Plug plant speak on "Reliability." Mr. Roth described the organization, testing and inspection, statistical methods and application involved in meeting contracts requiring high reliability.

Nebraska

The third meeting of the current year was held in Lincoln on January 5, 1960. The speaker was Dr. E. Z. Palmer, Chairman of the Department of Business Research of the University of Nebraska. Dr. Palmer discussed problems of estimating city and county populations in Nebraska between census years. Variables employed were school census, draft registrations and vital statistics. The annual estimates for the state made by the U. S. Census Bureau were allocated to counties and cities on the basis of the percentages secured from the above variables. A lively discussion took place after the presentation.

Dr. Harris, Chapter President, reported on the national meeting of the ASA in Washington and on details for the program for the remainder of the year. The Chapter was pleased at the fine attendance for the meeting despite icy roads and sub-zero temperatures.

On February 9th the Nebraska Chapter met jointly with the Lincoln-Omaha Chapter of the American Marketing Association at the Cornhusker Hotel in Lincoln, Nebraska. The speaker was Mr. J. T. Miller, Director of Research of the Meredith Publishing Company of Des Moines, Iowa. Mr. Miller discussed "Magazine Research—Why and How at Meredith." The meeting was preceded by a cocktail hour and a dinner.

New York

The first meeting of 1960 was held on January 27th under the sponsorship of the Statistical Techniques Division. Solomon Dutka, Adjunct Professor, NYU Graduate School of Business Administration, and President, Audits and Surveys, Inc., discussed "Sample Polls and Presidential Elections, 1948 and 1960." Mr. Dutka reviewed some of the statistical and non-statistical limitations of election polls. Among the major problems in election polling and forecasting are: (1) The universe one attempts to measure (i.e. the persons voting a given way) is not really available until after the election; (2) Public relations difficulties can arise if the wrong candidate is picked, no matter how close the forecast; (3) Presidential elections are determined by electoral vote, while polls usually predict only the popular vote; (4) Although the poll may have been correct for the time it was taken, last minute changes in voting intention can swing an election and make the poll appear inaccurate; (5) the "don't knows" and those who refuse to answer may not vote the same way as the rest of the sample. Mr. Dutka stated that "Given another close election like that which occurred in 1948, the polls will again be wrong." In order not only to educate the public but to protect the reputation of statisticians and statistical techniques as well, he suggested that the American Statistical Association press for a public disclosure of the limitations in every poll from which results are published. Such a disclosure would include the size of the sample, the sampling techniques, sampling error, and any qualifications the polling agency happened to have. The talk was followed by a lively discussion.

The subject of the February 4th meeting was the 1959 Build and Blood Pressure Study. Edward A. Lew, Actuary and Statistician, Metropolitan Life Insurance Company, was the speaker. Mr. Lew discussed the methodology of the study and presented some of the findings. Discussants were George A. Hutchison, M.D., Harvard School of Public Health, and W. D. Mortimer Harris, M.D., Office of Program Planning, New York City Health Department. The Chairman was Sam Shapiro, Health Insurance Plan of Greater New York.

At the February 18th meeting S. Stempler and E. H. Kahn, both of Reliability Division, Maxson, Inc., spoke on "Reliability Concepts Applied to Obtain Design Specifications from Measured Experimental Data." On the same program Marvin Goldstein, Airborne Instruments Laboratories, Division of Cutler-Hammer, discussed "Reliability for Exponential Life." Arthur H. Walner was chairman of the meeting.

The topic for the March 9th meeting was "Growth Patterns in American Industry", with emphasis on the reasons for expected long-range growth patterns. Todd May, Fortune Magazine, gave a general survey; Charles Root, American Metals Climax, dealt with copper; and Emil Schell, International Business Machines, discussed office equipment. The chairman of the meeting was Roger Williams, Union Carbide Corporation.

North Carolina

The Chapter has held three meetings thus far in 1960, two on the campus of the University of North Carolina in Chapel Hill, and one on the North Carolina State College campus in Raleigh.

On January 25th, in Chapel Hill, the Chapter was given topical instruction on "New Procedures in the 1960 Census." Speakers were Morris H. Hansen, President of the A.S.A. and Assistant Director for Statistical Standards, U.S. Bureau of the Census, and Joseph F. Daly, Mathematical Statistician, Bureau of the Census. Mr. Hansen outlined the new or enlarged processes in sampling, self-enumeration, quality control, computer employment, and experimental studies which will be applied, and Mr. Daly spoke on matters of reliability and the use of FOSDIC (Film Optical Sensing Device for Input to Computers) as reader-researcher of census sheets. The 1960 Census has certain special timely interest in North Carolina since the UNIVAC 1105, newly installed in the Research Computation Center of the University of North Carolina, with large support by the Census Bureau, will be very busy in the computation activities of the Census.

On February 23rd, in Raleigh, R. C. Geary, of the Statistical Office of the United Nations, addressed the Chapter on "The Contiguity Ratio and Statistical Mapping." Dr. Geary is on leave from the government of Eire, where he is chief of statistical services. His presentation included examples of the use of the titled procedures in demographic, business, and agricultural statistics of Eire. Reference to the material in the literature is *The Incorporated Statistician*, Vol. 5 (1950) No. 3.

On March 17th, in Chapel Hill, Marvin A. Kastenbaum, of the Mathematics Panel of the Oak Ridge National Laboratory, spoke to the Chapter on "Exact Partitioning of Chi-Square in Contingency Tables." Dr. Kastenbaum set forth the procedures whereby statistical investigation analogous to the analysis of variance can be applied to nominal and qualitative data.

Pittsburgh

The Chapter's January meeting was addressed by Mr. Arthur S. Kovert, Engineering Statistician, Bettis Atomic Power Laboratory, Westinghouse Corporation. Mr. Kovert's topic was "The Calculation of Interlamellar Spacing in Pearlitic Structures." The interlamellar spacing in metal alloys gives rise to a metallographic appearance called "pearlitic"; the true interlamellar spacing is not directly observed

in these sections. The speaker has developed a relation which permits computation of the moments of the logarithm of such spacing from the distribution of observed spacing in metallographic sections. The first four moments are used to obtain a Pearsonian distribution of the transformed spacing, from which the distribution of interlamellar spacing is obtained. Two measures of central tendency, the mode and the arithmetic mean, are computed.

On February 10, 1960, Dr. Eberhard M. Fels, Associate Professor of Mathematics, University of Pittsburgh, addressed the Chapter on "Recent Soviet Statistical Writings." He reported on increasing acceptance in official and academic circles of the applicability of mathematics, particularly probability theory, to economic statistics. While the Russians are splendid mathematicians, their text books in statistical methods were very unattractive and appeared to be somewhat behind the times. They keep a close eye on everything that is published in English.

On March 1st Mr. John Beresford, Instructor, School for Technical Officers, Bureau of the Census, discussed various aspects of the 1960 Census. He demonstrated how the self-enumeration form and the Fosdic schedule were handled by the enumerator, and described how quality of field enumeration was to be controlled. Some of the mechanics of processing the data were also reviewed.

Sacramento

The new officers of the Chapter are:

President—R. H. GUSTAFSON, State Board of Equalization

Vice President—EDMOND A. RADSLIFF, Division of Highways, Dept. of Public Works

Secretary—NICOLO PINO, Division of Research and Statistics, Department of Employment

Treasurer—STUART ADAMS, State Department of Youth Authority.

Saint Louis

At the February 18th luncheon meeting Dr. Mildred B. Kantor, Research Division, St. Louis County Health Department, spoke on "Methods of Community Mental Health Research." Dr. Kantor discussed the methods used in a current research project of the County Health Department, "An Evaluation of a Preventive Community Mental Health Program." Problems of research design, assessment and data treatment were examined.

Dr. Lee Robbins and Dr. William Bates of the Department of Psychiatry and Neurology, Washington University, were the speakers at the March 17th luncheon meeting of the Chapter. Their subject was "An Attempt to Evaluate the Long-run Influence of a Child-Guidance Clinic," a study of people who had been subjects in a child-guidance clinic 30 years earlier. The study focuses on the adult adjustment of the subjects, and is, in part, designed to find out what types of adult behavioral difficulties may be foreshowed by behavioral difficulties in childhood.

Meetings for the remainder of the 1959-60 year are scheduled as follows:

April 21—James Meigs, Federal Reserve Bank of St. Louis, "Measurement of Member Bank Responses to Free Reserves and Interest Rates."

May 19—Hugh Nourse, Roy Wenzlick & Co., "The Effect of Public Housing on Property Values."

June 16—William A. Clark, Monsanto Chemical Co., "Use of Electronic Computers in Market Research."

San Francisco

The following officers were elected at the annual meeting in January:

President—ROY C. CAVE, Department of Economics, San Francisco State College

Vice President—ERNEST C. OLSON, Economics Department, Bank of America

Secretary—RODERICK E. MACIVER, California Economic Development Agency.

Treasurer—MILTON KEENAN, U.S. Bureau of Labor Statistics

At the luncheon meeting on February 25th the speaker was Dr. Max Kossoris, Regional Director of the Bureau of Labor Statistics, currently on leave to study productivity and technological change in longshore labor for the Pacific Maritime Association. Dr. Kossoris' subject was "Problems in Measuring Work Performance in the Longshore Industry."

The San Francisco Bay Area Regional Rapid Transit Program was discussed at the luncheon meeting of March 15th. Henry D. Quinby, Principal Transportation Engineer with the engineering firm of Parsons, Brinckerhoff, Quade and Douglas, who has been associated for years with the Bay Area Rapid Transit project, was the speaker. Mr. Quinby discussed particularly the data-gathering and processing and the analytical studies necessary to planning the system.

Southern California

The subject of the January 28th dinner meeting was "College Business Statistics: Theoretical or Applied?" Dr. Clay Sprowls, Associate Professor of Business Statistics, Graduate School of Business Administration, U.C.L.A., and Associate Research Analyst, Western Data Processing Center, was the speaker. Dr. Sprowls discussed the issue of whether colleges should teach a more practical side of statistics.

At the February 25th dinner meeting the guest speaker was Dr. Frank S. Kristof, Assistant Chief of the Housing Division, Bureau of the Census. Dr. Kristof's topic was "Approaches and Emphasis in the 1960 Censuses of Population and Housing."

Virginia

The Chapter is planning a two-day annual meeting to be held May 13th and 14th at Richmond. The program for this meeting is reported in the "News" section of this issue.

Washington, D. C.

A joint meeting with the D.C. Sociological Society was held March 2nd on the topic "Population Growth—Outlook and Problems." Frank Lorimer, American University, spoke on "World Population", and Conrad Taeuber, Bureau of the Census, discussed "U.S. Population." Robert C. Cook, Population Reference Bureau, Inc., and Ernest Rubin, Bureau of Foreign Commerce, were discussants. The chairman of the meeting was Stuart A. Rice, Surveys and Research Corporation. The attendance was unusually large, with about 250 members and guests present.

(CONTINUED FROM INSIDE BACK COVER)

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Donald C. Riley
W. Allen Wallis

Technical Committee on Broadcast Ratings
William G. Madow *
Herbert Hyman
Raymond Jessen

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Ernest Kurnow

American Standards Association—Y10 Committee on Letter Symbols
Milton Morrison

Council of Population and Housing Census Users
Stuart A. Rice

Inter-American Statistical Institute
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International Statistical Institute
Donald C. Riley

National Bureau of Economic Research
W. Allen Wallis

Social Science Research Council
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Committee on Chapter and Regional Activities

Howard L. Jones *
Walter E. Hoadley, Jr.
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THE PRESIDENT'S COLUMN—CONTINUED FROM PAGE ONE

A chapter giving specific information on high school and college courses will provide guidance on the kind of education needed and some of the rewards and satisfaction that can be expected. Specific job descriptions and salary arrangements may also be included. Some of the philosophical and practical aspects of a career in statistics will be covered in a section on the pleasure of problem-solving in mathematical statistics and achievements in solving human problems. Finally the societies in the general areas of statistics may be listed, along with a brief bibliography of popular books and introductory texts and references.

With the completion of this new booklet on careers in statistics (probably by early summer) ASA and IMS will have for widespread distribution a booklet which will present the basic information necessary for those interested.

In the President's column of the February 1960 issue of THE AMERICAN STATISTICIAN, I touched briefly on the proposed conference of representatives of statistical societies. A grant of $9,000 has recently been awarded by the Rockefeller Foundation to help support expenses for meetings to investigate methods of cooperation among various statistical societies. The ASA has already appointed its committee headed by Frederick Mosteller, Chairman of the Department of Statistics at Harvard and a Director of ASA, to consider this question and provide guidance to the Board and Council. Committee members are: A. H. Bowker, Gertrude M. Cox, John H. Curtiss, Walter T. Federer, Dorothy M. Gilford, Walter E. Hoadley, Jr., Rensis Likert, Edwin G. Olds, James Tobin, Samuel S. Wilks, Martin R. Gainsbrugh (ex officio), Morris H. Hansen (ex officio), and Donald C. Riley (ex officio). The full title is the Committee on the Relationship Among Statistical Societies ("Contrasts"). Steps are now in process to arrange an initial conference of representatives of various societies perhaps during the summer. Further details will be forthcoming.

The 1959 Proceedings of both the Business and Economic Statistics Section and the Social Statistics Section are in preparation. The B & E Proceedings will be available about the end of April and the Social Statistics volume should appear about mid-May. A descriptive order form will be sent to all members as each Proceedings becomes available for distribution. I hope you will watch for these announcements and order your copy early. As usual, the selling price will be set merely to recover costs. The magazine TECHNOMETRICS, will serves as an outlet for papers dealing with statistics in the physical and engineering sciences, will carry in 1960 issues some papers given at the SPES sessions in Washington last December.

TECHNOMETRICS

Volume 2, Number 1, February 1960

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